Volume 89 Number 25

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

IN DECIDING to convene congress in December the founding fathers may have been guided providentially, for with inventory time approaching, holidays interrupting and business generally in a backwash at the year end, industry can then absorb the shock of legislative conflict with the least derangement. So thoroughly has this December been discounted that industry now is unusually resilient. One week has sufficed for opposing political forces at Washington to lock horns, but this expedites the inevitable preliminary skirmishing. What is important—and probable—is that by January, when industry will be endeavoring to get away to a fresh start, certain vital issues will have been clarified. Industry can adjust itself to almost any known situation, but uncertainty is paralyzing.

No Taxation Without Compromise

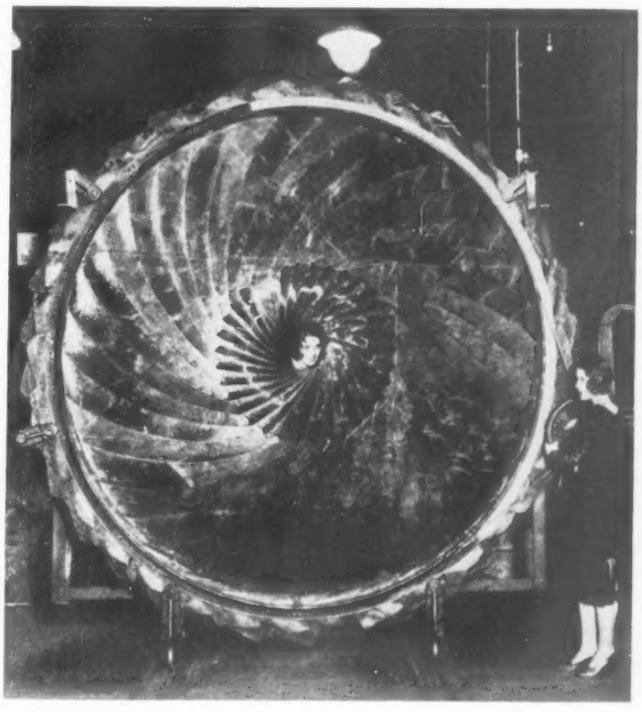
The issue at Washington is being joined first on taxation, of paramount interest to industry. Already certain deductions (page 17) can be made: Any tax program adopted will be a compromise between a Democratic-controlled congress and a Republican president; only a political miracle can effect such a compromise in time to apply to returns for the calendar year 1931; there is nothing to indicate a change in the traditional Democratic policy of assessing the individual more lightly than the corporation, hence the likelihood is greater of increasing the corporation tax and income surtaxes than of reviving wartime nuisance imposts.

I. C. C. Backs Own Rate Ideas on Siding

While industry awaits the outcome, which conceivably might be the issuance of bonds in lieu of the full additional two billion dollars which the treasury would raise in 2 years, the interstate commerce commission is moving to a speedy adjustment of freight rates, thereby removing one more moot point before January. Putting actual relief ahead of splitting hairs, the commission has sanctioned (page 17) the railroad pool plan for distributing increased revenues, has translated per-car advances in terms of tons, has referred to shippers and carriers the matter of applying the increase where a water haul intervenes between two rail hauls, as in the case of most Lake Superior iron ore.

Would Harmonize Prices and Demand

Still another adjustment being made this month to unshackle a possible January revival of business pertains to prices. In determining first quarter schedules producers are attempting (page 47) to attain more remunerative levels without raising a barrier to a free flow of demand. Most producers of steel would be satisfied with a stabilization of official fourth quarter



Wide World Photo

In the garden of kilowatt: Resembling a huge sunflower, this iris shutter, with parts of steel, is opened and closed much like that on a small camera. It is the "eye" of a General Electric searchlight

Credit, Linde Air Products Co.

Wrecking large steel buildings, comparatively modern, to make room for still larger structures, sometimes presents a tough problem. But cutting down or building up, the acetylene torch is master

quotations. . . . On ferroalloys, where prices are set for a half or full year, deep cuts have been announced (page 62). . . . Reviewing world conditions, the National Foreign Trade council discerns (page 20) a tendency toward stabilization in domestic prices, which may permit the United States to lead a world recovery.

Index Dangerous When a Fetish

Such a recovery doubtless will be heralded by many statistical indicators, which will redound to their sensitiveness, but a warning against blind faith in industrial indexes has been sounded (page 20) by an assistant secretary of commerce. Only when correlated with other indicators are they a trustworthy guide. . . . There is, however, no doubt concerning the steel ingot production statistics for November (page 21), disclosing the first increase since March. Due to their greater flexibility, more bessemer converters than open-hearth furnaces were put on. . . . Statistics for many branches of industry (page 78) show October a low month, strengthening the hope that barring the year-end lull the bottom of the depression was passed then.

Better Steel, If Not More Steel

Lacking tonnage, producers of steel are concentrating on quality. . . . An improvement sought in open-hearth practice is the elimination of surface scabs and seams, which often lead to the scrap heap. One remedy (page 38) is to hold the metal in the ladle a short time, then pour as rapidly as the nozzle permits. . . . To obviate deep surface defects, one steelworks (page 40) is pouring heavy octagon forging ingots at the outside of the mold instead of the center, slowly revolving the mold during pouring. . . . When a 125-ton open-hearth furnace in southern Ohio was equipped with a mechanical ejector a 10 per cent saving on fuel followed (page 40) with no impairment of production.

Make Finishing Mills More Effective

Likewise, finishing mill practice is constantly being refurbished. . . .In cold rolling strip steel much-sought tension of the strip between roll stands of tandem mills is being gained (page 31) by improved control devices . . . .A Pittsburgh district producer has found it advantageous (page 40) to equip a 20-inch cold strip mill with a reel drive which affords a 7000-pound tension . . . . To facilitate the handling of sheets in packs or piles, a manufacturer of mill equipment has perfected an improved carrier (page 35) which features low head room, positive grip and ease of operation. Made entirely of rolled steel, the unit is light weight, compact, sturdy.

Will To Improve Survives in Europe

In Europe the urge to improve practice survives a complicated financial situation and confusion in markets (page 74) caused in part by the British excursion into the realm of tariffs. . . . Engineers in England and on the Continent have been paying particular attention (page 36) to the rolling of seamless drums, extrusion of seamless tubes, automatic welding of wide flange beams. . . . Recent earnest thinking in the United States on the subject of welding has developed a preponderance of opinion in favor of nondestructive methods of examining welded material (page 34). Hydrostatic pressure, air pressure, low pressure, reheating, stethoscope and X-ray tests are approved.

New Trade Association Is Born

Almost the last important branch of industry to organize, 62 manufacturers of materials handling equipment and accessories have formed the Materials Handling institute (page 18). . . . Meeting at Pittsburgh, the Steel Founders' Society of America took a definite stand (page 19) to adhere to the A. S. T. M. specifications for railroad castings. Plans are being laid for a symposium on steel castings at the 1931 A. S. T. M. convention.

Business Tax Rise Certain; Freight Rates Go Up Jan. 1

WASHINGTON — With the 72d congress only one week old Republicans and Democrats already are at loggerheads on taxes, but out of the confused situation this deduction appears safe: Only a compromise tax program is possible, and business will foot most of the bill.

The fat went into the fire when Secretary Mellon, amplifying the generalities in the President's message to congress, proposed what is tantamount to a revival of the revenue act of 1924.

This precipitated Democratic criticism and the intimation that a Democratic program will be submitted. The tax bill, which must originate in the house, will be formulated under Democratic control; a coalition of Democrats and Republican insurgents can pass such a bill in the senate. But without Republican assistance no measure can be passed over the President's veto.

See Delay in Compromise

Presumably, whatever tax increases are voted will not be retroactive; Democrats are opposed to applying new tax measures to 1931 incomes and profits, and the difficulties in effecting a compromise undoubtedly will delay it until too late.

First reaction of the majority leaders in the house was unfavorable to imposing nuisance taxes, such as a stamp tax on bank checks, a 10 per cent amusement tax applying to admissions beginning at 10 cents, and a tax of 5 to 10 cents on telephone messages of 15 cents and over, as proposed by Secretary Mellon.

However, no comment has developed on the proposal to increase the corporation tax from 12 per cent to 12½, omission of the exemption of the first $25,000 of profits but allowing a deduction for gifts for unemployment relief.

Secretary Mellon's program includes a 5 per cent tax on the list price of passenger automobiles, 3 per cent on trucks, 2½ per cent on tires and accessories, 5 per cent on radios and phonographs, and increases in the real estate transfer and tobacco imposts.

Income taxes also would be increased. Exemptions would be lowered to $1000 for single persons and $2500 for married ones. On the first $4000 net the new rate would be 2 per cent, on the next $4000 to 4 per cent, on all above $8000 to 6 per cent. Surtaxes would virtually be doubled, with a maximum of 40 per cent on incomes of $100,000 and over.

While there will be much discussion, the first tangible step in enacting a new revenue law will be hearings by the house ways and means committee, in charge of a Democratic chairman and majority. It would be making unusual speed were a bill to be reported out before the holidays.

A policy committee of Democrats of both the senate and house will formulate the opposition policy.

□ □ □

Interstate commerce commission, in approving the railroads' program for distributing as loans and not as gifts the increased revenue derived from freight rate increases granted in the 15 per cent case, cleared the way for making the increases effective 24 hours after new tariffs are filed by the carriers. It is expected the new rates will apply Jan. 1.

Advances granted in terms of cars have been translated into cents per net ton. Thus, on iron ore, coal, mill cinder and scale, slag and virtually all mine products the increase will be 6 cents per net ton. Rates on pig iron and scrap go up 12 cents per net ton. On finished iron and steel, including less-carloads, the rise will be 2 cents per 100 pounds.

While the commission specifies that only one increase shall apply to through shipments moving under combination rates, it states "this proviso does not apply where there are two movements subject to the act separated by an intermediate movement not subject to the act." It is assumed, however, that an adjustment will be made by shippers and carriers relative to the separated rail hauls on iron ore.

Railroad labor leaders, meeting in Chicago last week, at the outset were in no mood to act favorably on the railroads' suggestion a 10 per cent wage reduction be taken voluntarily. A reduction of 10 per cent among salaried officers and nonunion employes by the Illinois Central and a 5 cent an hour cut among certain maintenance employes by the Chicago & North Western has aroused some feeling.

□ □ □

Representative Williamson, of South Dakota, has made good his intention of introducing a bill prohibiting the importation of manganese ore from Russia.

A similar bill was introduced in the senate by Senator Oddie, of Nevada. In a long formal statement the senator reviewed the situation created by large imports from Russia and said: "Were the importation of soviet manganese stopped the American industry would find a domestic market available to it and 50,000 unemployed men could be put back to work."

A bill by Representative Evans, of Montana, would make copper dutiable at 4 cents per pound on the copper content.

A powerful group of conservatives in the British parliament is reported insistent on immediate action on an emergency duty on all iron and steel products.

□ □ □

Charles E. Mitchell, chairman of the National City Bank, New York City, told a senate committee business cycles cannot be prevented by estab-

If spare tires and spare rails, why not spare pipes? Every 20 miles engineers of the Panhandle Eastern Pipe Line Co. stock one 20 and one 8-foot section of pipe of the diameter laid in that district. These spares are mounted on stands made of scrap pipe, the ends being sealed with sheet steel and couplings. Couplings and clamps are tack welded to prevent theft. Here is depicted a typical 20-foot spare. Photo courtesy National Petroleum News

lishment of a national economic council.

□ □ □

Congress will be asked to legislate for the federal control of the coal industry.

□ □ □

Senator Couzens has introduced a resolution calling for appointment of a joint committee of the senate and house to look into the railroad situation.

□ □ □

Postmaster General Brown in his annual report asked that mail rate be increased to 3 cents for nonlocal letters pending return of normal business.

Warns of Dangers in Opening Antitrust Laws

Under present political psychology greater freedom for industrial combinations cannot be secured without equivalent concessions in respect to governmental supervision of business, states the National Metal Trades association, Chicago.

No matter how conservative a bill may be presented in congress to revise the antitrust laws, political forces at work there might so alter it in the course of its legislative journey that the ultimate outcome might be injurious to business.

This danger may come from organized labor, which has always sought exemption from the antitrust laws, which would impair the principle of the open shop without giving a corresponding liberty to employers, or it might come from a bill, starting with moderate provisions for supervision but amended by radical interests to increase this, the association warns.

There is much ground for a question whether the antitrust laws have substantially contributed to our present difficulties or whether an amendment of these laws would constitute a substantial remedy, states the association.

OIL CRACKING UNIT REPORTED LARGEST EVER BUILT: The reaction chamber is 10 feet in inside diameter, 67 feet 7 inches in length, has a wall thickness 3½ to 7½ inches, weighs 404,000 pounds. The tower is 8 feet inside diameter, 72 feet 2 inches long, its wall is 2¾ inches thick, it weighs 253,000 pounds. The chamber and tower will be joined in the field to form a single vessel in the form of an inverted T. This joint, incidentally, it is said, will be the largest weld on record, 25 feet in circumference, 2¾ inches thick. The unit was built by the A. O. Smith Corp., Milwaukee, for the Mid-Continent Petroleum Corp.'s Tulsa, Okla., refinery

Materials Handling Institute Formed; Will Meet Next at Philadelphia

REPRESENTATIVES of 62 companies engaged in the manufacture of materials handling equipment and accessories, met Dec. 8 at Cleveland and organized the Materials Handling institute.

Officers for the ensuing year are: President, Frank E. Moore, president Mathews Conveyer Co., Ellwood City Pa.; vice president, Jervis B. Webb, president, Jervis B. Webb Co.; treasurer, H. W. Standart, president, Northern Engineering Works, Detroit; and secretary, John A. Cronin, editor, *Materials Handling and Distribution*, New York.

A board of governors, representing groups within the industry, was named as follows: H. W. Standart, hoists and cranes; F. E. Moore, gravity conveyors; Jervis B. Webb, continuous conveyors; J. F. Thomas, Nutting Truck Co., Faribault, Minn., floor trucks and casters; Brinton Welser, Chain Belt Co., Milwaukee, portable and bulk conveyors; E. F. Twyman, Barrett-Cravens Co., Chicago, lift trucks and portable elevators; S. W. Gibb, Yale & Towne Mfg. Co., Philadelphia, industrial trucks and tractors; William E. Bee, Palmer-Bee Co., Detroit, transmission; H. H. Perry, Geo. D. Whitcomb Co., Rochelle, Ill., crawler cranes and locomotives; A. F. Anjeskey, Cleveland Tramrail division, Cleveland Crane & Engineering Co., Wickliffe, O., tramrails; and Richard F. Straw, American Kron Scale Co., New York, accessories.

The next meeting of the institute will be held at Philadelphia during the week of May 2 in connection with the convention of the American Foundrymen's association and other groups.

Master Tariff May Speed Advance in Freight Rates

Chicago—Mixed opinions greet announcement of authorized freight rate increases. Some iron and steel traffic men feel this will be a step toward putting the carriers on a better footing, while others point out that the significance of the increase to the railroads has been exaggerated.

Some doubt is expressed whether the proposed increase will give the railroad situation needed relief. According to information here, next Jan. 4 is the earliest date that the increased rates may become effective.

Assuming that the carriers will proceed with the loan plan at once, it is asserted that it will take at least until early in the new year to accomplish the details of filing the proper proceedings with the interstate commerce commission.

It is indicated, according to word here, that a master tariff is likely to be filed, to be agreed upon by all the carriers. This would name the specific increases to be allowed. It would then be up to the carriers to check the specific rate classifications in order to make the rates conform with general traffic groupings.

Taylor Sees Improvement

New York—The working out of the law of supply and demand will correct very soon the present eco-

nomic distress and the wheels of commerce will be made to turn again, forecast Myron C. Taylor, chairman of the finance committee, United States Steel Corp., Dec. 7, at a meeting of the St. Nicholas society.

Mr. Taylor warned against further foreign loans and a reduction of the tariff. He defended mechanization as providing even greater employment.

To Present Exchange Papers

American Foundrymen's Association, through its technical secretary, R. E. Kennedy, has announced the authors of two exchange papers for 1932.

F. A. Melmoth, Detroit Steel Castings Co., Detroit, will prepare the exchange paper for the Australian association.

R. S. MacPherran, Allis-Chalmers Mfg. Co., Milwaukee, will write the annual exchange paper for the convention of the Institute of British Foundrymen. The latter will discuss high test cast iron.

Engineers To Discuss Coal

A symposium on the classification of coal will be held under auspices of the coal division of the American Institute of Mining and Metallurgical Engineers in New York in February.

Chrome Ore Only Import

Philadelphia—In the week ended Dec. 5 the only iron and steel import here was 1801 tons of chrome ore from Cuba.

Steel Founders Hold to A. S. T.M.Code for Railroad Work

OPPOSITION to changes in the required tensile properties for railway castings was voiced at the meeting of the Steel Founders' Society of America in Pittsburgh, Dec. 10.

The society adopted a report of a special committee on A. R. A. specifications, of which A. F. Lorenz Jr., American Steel Foundries, East Chicago, Ind., is chairman, definitely committing the society to exclusive adherence to the castings specifications as promulgated by the American Society for Testing Materials.

The adopted recommendation states that such a commitment would not obligate any member of the Steel Founders' society to refuse to manufacture materials according to more impressive combinations of physical properties than are found in any A. S. T. M. or other national recognized specification.

Would Mean Higher Prices

However, the obligation would commit the member to a policy of reasonably requiring higher prices than are asked for regularly when material of the well-known carbon grade is demanded.

The committee report was presented by Arthur Simonson, Falk Corp., Milwaukee, and before adoption was discussed by a number of members including S. Wells Utley, Detroit Steel Casting Co., Detroit; W. H. Worrilow, Lebanon Steel Foundry, Lebanon, Pa.; W. J. Corbett, Fort Pitt Steel Casting Co., McKeesport, Pa.; and R. A. Bull, Electric Steel Founders' Research group, Chicago.

The meeting was opened by W. H. Worrilow, president of the society, who introduced W. W. Powell, Mesta Machine Co., Pittsburgh, and vice president of the society, who presided. R. F. Nash, Pettibone-Mulliken Co., Chicago, as chairman of the cost committee, reported the completion of the uniform accounting and cost plan of the society. The committee and the cost engineer of the society recently completed a standard estimate form based upon a study of forms in use by member companies.

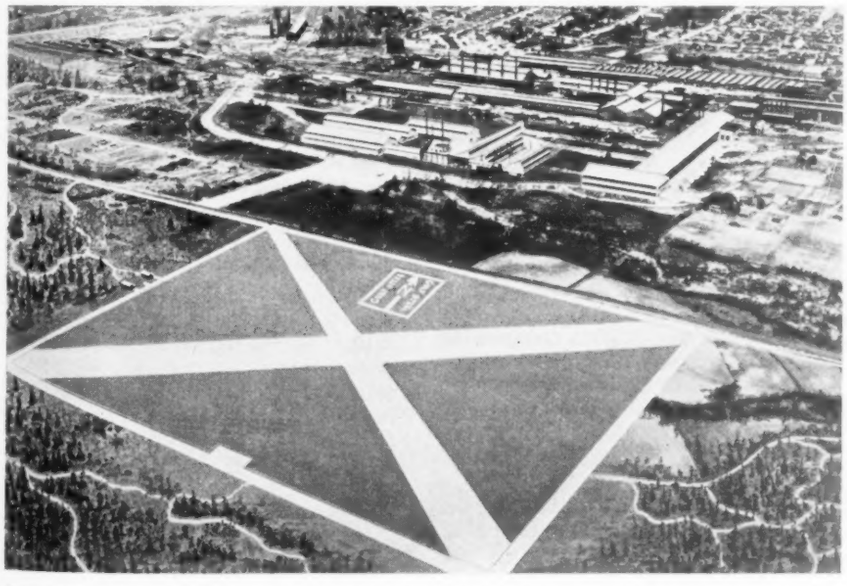
Other Reports Presented

The standard estimate form recently was issued as supplement No. 1 to the uniform accounting and cost plan. R. L. Collier, assistant to the managing director, reported on the progress made by the subcommittee on recommendations to designers, of which R. S. Munson, Atlantic Steel Casting Co., Chester, Pa., is chairman. The final report of the subcommittee will be ready soon for submission to the technical research committee.

Granville P. Rogers, managing director, outlined the symposium on steel castings to be presented at the 1932 convention of the American Society for Testing Materials. The symposium will include a general survey of the steel castings industry, data on test bar specifications for both carbon and alloy steels, a discussion of the general principles of design as indicated by physical properties, the heat treatment of steel castings, and the development of alloy steels.

F. A. Lorenz Jr. is preparing a paper also to be included in the sym-

(*Concluded on Page* 68)



GULF STATES STEEL CO. BECOMES AIR-MINDED: This airport at Gadsden, Ala., dedicated Dec. 10, is believed to be the first laid out by a major steel company. It is called the Gulfsteel airport. Hangars will be built later

Wellman Co. Buys Williams Bucket and Trailer Business

The Wellman Engineering Co., Cleveland, has acquired by purchase the clam shell bucket and heavy-duty trailer business of the G. H. Williams Co., Erie, Pa., including goodwill, drawings, patterns, inventions, patents, etc. The engineering, manufacture and sale of these products will be immediately transferred to the Wellman plant in Cleveland.

The Wiliams company has been in business for some thirty years, is one

of the oldest builders of the clam shell type of material handling buckets, and was the originator of the power arm type. The Williams line is complete from the light bucket for fastest rehandling, to the massive powerful ore, dredging, and clean-up types, for one-line, two-line, three-line, four-line and hook-on operation, and for every kind of hoisting equipment.

The Williams heavy-duty "arch girder" type of trailer, is built in capacities from 5 tons to 60 tons and larger, in 6-wheel, 8-wheel, 10-wheel, and 12-wheel types, for use in transporting contractor's and other types of heavy equipment. It is reported that production has doubled during the present year.

W. C. Swalley, secretary and general manager; A. J. Lightinger, assistant manager; C. F. Weiblen, sales manager; and P. T. Robin, chief engineer of the Williams company will be associated with the Wellman company at Cleveland in the manufacture and sale of this equipment.

These two lines will continue to be marketed under their trade names, "Williams Bucket" and "Williams Trailer." The Wellman company now is in position to furnish buckets for any class of work.

How Prices and Cost of Living Have Declined Since 1923

From department of commerce annual report; Calendar years 1923-25 equal 100

Item	Fiscal year ended June 30— 1923	1924	1925	1926	1927	1928	1929	1930	1931
Wholesale prices:									
General average	100.5	97.4	99.8	101.8	96.1	95.8	96.7	92.8	77.4
Farm products	94.1	95.3	103.7	103.3	93.7	101.9	102.2	97.2	73.6
Foods	96.8	95.8	101.3	107.3	103.0	104.3	106.0	103.2	85.8
Other products	104.7	99.1	98.2	99.8	94.7	91.0	91.2	88.4	76.7
Hides and leather products	103.8	97.2	101.0	98.3	97.5	114.6	109.9	102.5	88.8
Textile products	99.2	99.7	98.6	96.5	88.1	88.9	88.0	82.0	66.1
Fuel and lighting	115.8	96.8	97.1	102.7	99.8	86.5	87.0	83.7	72.5
Metals and metal products	100.1	101.5	98.3	94.4	93.6	92.2	96.9	95.2	84.7
Building materials	102.6	100.9	97.3	96.7	93.6	88.3	92.4	91.6	80.1
Chemicals and drugs	100.5	98.6	99.7	100.8	97.6	95.4	94.6	91.9	83.0
House furnishing goods	101.2	101.5	98.6	96.2	93.4	93.1	91.6	91.7	87.7
Miscellaneous	96.7	94.6	95.6	111.6	91.4	86.7	79.4	78.7	66.0
Farm prices	93.4	95.0	102.0	103.0	93.0	99.0	98.0	96.0	70.0
Retail foods	95.4	97.8	100.1	108.0	105.0	102.6	103.3	103.3	89.3
Cost of living	96.1	99.2	100.3	102.5	100.7	98.7	98.0	97.6	89.9

Business Is Better

Ajax Flexible Coupling Co., Westfield, N. Y., has booked an order for over 800 flexible couplings for conveyor drives for the Chicago postoffice. This is believed to be the largest order of its kind for a single system.

□ □ □

Page Steel & Wire Co., Adrian, Mich., has resumed on full time.

□ □ □

Orders for oil burners in October were the highest for 1931, according to the department of commerce.

□ □ □

Missouri Pacific railroad has returned 1200 men to work at its Little Rock, Ark., shops.

□ □ □

Warner Gear Co., Muncie, Ind., expects to re-employ its idle workmen as a result of new contracts, including one for transmission and free wheeling units for the new Rockne automobile.

□ □ □

Midland Steel Products Co., Cleveland, is installing additional equipment at Cleveland for the manufacture of a new axle housing.

□ □ □

Approximately 1000 men have returned to work in the Missouri, Kansas & Texas railroad shops at Parsons, Kans., Sedalia, Mo., and Denison and Waco, Tex. These shops have been closed since Sept. 18.

Prices Becoming Stabilized, United States May Lead World Recovery

BECAUSE domestic price levels for the first time in almost two years have acquired a comparative stability, the United States may be the first nation to recover from the present world wide depression, states the National Foreign Trade council, New York, in its annual report.

In the first six months of 1931 domestic prices fell 11 per cent from June, 1930, but in the past five months the fluctuation has stayed within 2 per cent.

The first requisite to world recovery, according to the council, is stabilization of prices, and the most favorable aspect of the present situation is the fact that in most other countries their fall is slackening or already has ceased.

World export trade for 1931, based on 10-month figures, will be slightly under $20,000,000,000, on the basis of export prices in 1913. This is a reduction of 16 per cent in real value from 1930. From 1929 to 1930 the recession was 9 per cent.

In 1930 exports by the United States fell 18 per cent, and the rest of the world 9 per cent. In the first half of 1931 American exports slumped 22 per cent and the remainder of the world 16 per cent. In the first half of 1931 the United States share of world exports was 14 per cent of the total, compared with 12.3 per cent in 1913.

The continued relative recovery of Germany is appraised the outstanding feature of 1931. This year, for the first time, German exports are exceeding those of Great Britain. Germany's ascendency is ascribed in large measure to her increasing sales to Russia.

To Discuss Casting Design

The importance of casting design will be considered at a special meeting of the Philadelphia Foundrymen's association, to be held Jan. 13 at the Manufacturers' club, Philadelphia. Because of the significance of the subject from an engineering standpoint, members of the Philadelphia section of the American Society of Mechanical Engineers and others have been invited to participate. H. J. Rowe, Aluminum Co. of America, Cleveland; K. V. Wheeler, Lebanon Steel Foundry, Lebanon, Pa.; and B. H. Johnson, R. D. Wood & Co., Philadelphia, will be speakers.

Would Debunk Statistics

Too much emphasis is placed upon statistical formulae, declared Dr. Julius Klein, assistant secretary of commerce, in an address at Philadelphia, Dec. 10. When railroad car loading figures decline insufficient consideration is given the unreported traffic diverted to trucks and pipe lines, he cited.

Steel Cost Worries Japan

Washington — During the past week Japanese government and private officials have been endeavoring

to find a solution to the increasing difficulties facing the iron and steel industry, especially since production costs of steel materials and pig iron are above current import market quotations, according to a cablegram received in the Department of Commerce from Commercial Attache H. A. Butts, Tokyo.

Galvanized Ware Off; Shipments, Output Down

Galvanized ware output for October not only proved to be the third successive monthly decline but also almost touched the June level, low of 1931. Shipments, however, were the lowest for 1931. Production of other ware declined from September, according to the department of commerce reports:

In Dozens

	Pails and Tubs		Other Ware
1930	Production	Shipments	Production
Oct.	130,906	115,185	40,084
10 mo.	1,162,262	1,149,460	401,853
Nov.	60,798	68,330	16,061
Dec.	87,140	68,898	21,657
Year	1,309,097	1,307,928	440,981
1931			
Jan.	103,677	133,977	23,716
Feb.	132,781	120,723	34,347
March	146,438	144,637	31,542
April	143,258	140,080	34,929
May	121,413	122,072	28,390
June	92,460	90,747	26,304
July	103,345	114,134	26,970
Aug.	136,003	129,693	34,709
Sept.	110,253	120,851	32,276
Oct.	98,340	88,270	26,626
10 mo.	1,186,808	1,209,160	299,809

Steel's Backlog Drops For Eighth Straight Month

Declining at the rate of 5.94 per cent from the October level, unfilled orders of the United States Steel Corp. as of Nov. 30 were 2,933,891 tons, a decline of 185,541 tons from Oct. 31. With but two exceptions declines have been shown for every month of 1931, as the following compilation shows:

1930			
Jan. 31	4,468,710	51,517+	1.20+
Feb. 28	4,479,748	11,038+	0.25+
Mar. 31	4,570,653	90,905+	2.03+
April 30	4,354,220	216,433—	4.73—
May 31	4,059,227	294,993—	6.78—
June 30	3,968,064	91,163—	2.24—
July 31	4,022,055	53,991+	1.36+
Aug. 31	3,580,204	441,851—	10.9—
Sept. 30	3,424,338	155,866—	4.35—
Oct. 31	3,481,763	57,425+	1.68+
Nov. 30	3,639,636	157,873+	4.53+
Dec. 31	3,943,596	303,960+	8.35+
1931			
Jan. 31	4,132,351	188,755+	4.78+
Feb. 28	3,965,194	167,157—	4.04—
Mar. 31	3,995,330	30,136+	0.73+
Apr. 30	3,897,729	97,601—	2.24—
May 31	3,620,452	277,277—	7.11—
June 30	3,479,323	141,129—	3.89—
July 31	3,404,816	74,507—	2.14—
Aug. 31	3,169,457	235,359—	6.91—
Sept. 30	3,144,833	24,624—	0.77—
Oct. 31	3,119,432	25,401—	0.30—
Nov. 30	2,933,891	185,541—	5.94—

Bessemer Gives Steel Ingot Output a Lift in November

FOR the first increase in steel ingot production since March, disclosed by American Iron and Steel Institute statistics for November, the bessemer converter gets the credit.

Although November was only a 25-day month, compared with 27 for October, the month's total output of bessemer steel was 240,441 gross tons, compared with 195,943 tons in October. Open-hearth output, meanwhile, was tapering from 1,320,158 tons to 1,276,906 tons, an increase on a daily basis but relatively less than the improvement in bessemer.

For both open-hearth and bessemer ingots, November's daily rate was 63,747 tons, compared with 58,977 tons in October and 59,523 tons in September. In November, 1930, the daily rate was 88,489 tons.

November thus rates as a 30.01 month, compared with 27.76 for October and 28.02 for September. A year ago, November was a 44.2 per cent month.

For 11 months of 1931 output of both open-hearth and bessemer steel totals 23,597,796 tons, against 37,306,740 tons in the comparable period of 1930. This places the 1931 total as approximating 25,000,000 tons, which compares with 1930's 39,286,287 tons.

In 11 months, steelmaking capacity has been engaged 38.97 per cent, on the average; in the same months of 1930, 65.38 per cent. For all 1930 the average was 63.09 per cent.

New Gray Iron Business Gains; Output Is Down

According to the indexes of the Gray Iron Institute Inc., Cleveland, production of gray iron castings declined slightly in October, but new business

(*Concluded on Page* 78)

Additional statistics of industry will be found on page 78.

Steel Ingot Production — 1930-31

95.21 Per Cent of Industry Reporting
Gross Tons

1930	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	3,157,761	441,572	3,599,333	3,778,235	27	139,935	69.89
Feb.	3,335,428	508,618	3,844,046	4,035,111	24	168,130	83.98
Mar.	3,513,269	539,616	4,052,885	4,254,331	26	163,628	81.73
Apr.	3,405,671	509,234	3,914,905	4,109,492	26	158,057	78.95
May	3,265,353	528,968	3,794,321	3,982,915	27	147,515	73.68
June	2,849,079	407,586	3,256,665	3,418,535	25	136,741	68.30
July	2,430,128	353,723	2,783,851	2,922,220	26	112,393	56.14
Aug.	2,541,367	374,467	2,915,834	3,060,763	26	117,722	58.80
Sept.	2,275,910	429,975	2,705,885	2,840,379	26	109,245	54.56
Oct.	2,165,341	399,704	2,565,045	2,692,539	27	99,724	49.81
Nov.	1,807,133	300,337	2,107,470	2,212,220	25	88,489	44.20
11 mos.	30,746,440	4,793,800	35,540,240	37,306,740	285	130,901	65.38
Dec.	1,659,026	226,788	1,885,814	1,979,547	26	76,136	38.03
Total	32,405,466	5,020,588	37,426,054	39,286,287	311	126,322	63.09
1931							
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
May	2,083,833	301,639	2,385,472	2,505,485	26	96,365	45.36
June	1,730,109	246,365	1,976,474	2,075,910	26	79,843	37.58
July	1,570,776	225,030	1,795,806	1,886,153	26	72,544	34.15
Aug.	1,462,469	174,631	1,637,100	1,719,462	26	66,133	31.13
Sept.	1,274,321	199,151	1,473,472	1,547,602	26	59,523	28.02
Oct.	1,320,158	195,943	1,561,101	1,592,376	27	58,977	27.76
Nov.	1,276,906	240,441	1,517,347	1,593,684	25	63,747	30.01
11 mos.	19,628,114	2,839,348	22,467,462	23,597,796	285	82,799	38.97

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

Industrial Men in the Day's News

Robert H. Morse, President and General Manager, Fairbanks, Morse & Co., Chicago

WITH the exception of a military service period he has been continuously with Fairbanks, Morse & Co. for the past 36 years.

HE has served his company in that time in more than eight different capacities.

NOW he has been named president and general manager of the company founded by his father.

ROBERT H. MORSE, formerly vice chairman of the board of directors, Fairbanks, Morse & Co., Chicago, was elected to the positions of president and general manager to succeed W. S. Hovey on his resignation Dec. 1.

Mr. Morse was born in Chicago, Dec. 6, 1878. In 1895 he entered the employ of Fairbanks, Morse & Co., the firm founded by his father, C. H. Morse. He began his career with the company as an apprentice at the Beloit, Wis., plant, then known as Fairbanks-Morse Mfg. Co., and, except during his military service, when he was Lieutenant-Colonel in the Signal Corps, has been with the company continuously over a period of 36 years to the present.

In that time, he has been employed in various positions as salesman, department manager, branch house manager, sales manager, president of the manufacturing division, vice president in charge of purchases, first vice president, vice chairman of the board and now president and general manager.

Mr. Morse is also a director of E. & T. Fairbanks & Co., the Canadian Fairbanks-Morse Co. Ltd., E. & T. Fairbanks Co. Ltd. and Central Republic Bank & Trust Co., Chicago.

STACEY H. WIDDICOMBE has been appointed sales manager, Robinson Iron & Steel Co., fabricator, Manayunk, Pa., suburb of Philadelphia. Mr. Widdicombe was formerly Philadelphia district sales manager, Shoemaker Bridge Co., Pottstown, Pa., with which he had been affiliated for 15 years. Prior to that he had been associated with the Phoenix Bridge Co., Phoenixville, Pa., for 5 years. Mr. Widdicombe was graduated in engineering from University of Pennsylvania in 1915.

□ □ □

P. Hunter has been named purchasing agent, Chicago, Burlington & Quincy railroad, to succeed the late E. F. Hasbrook.

□ □ □

H. E. Joy has been appointed steel buyer for Chrysler Corp., Detroit, to succeed A. Mullen. Mr. Joy had been associated with Dodge Bros. Inc. for many years and recently has had supervision of the materials planning department.

□ □ □

S. Livingston Mather, vice president, Cleveland-Cliffs Iron Co., Cleveland, has been re-elected president of the American Mining Congress, Washington. Other officers chosen were: Vice presidents, A. E. Bendelari, Eagle-Picher Lead Co., Cincinnati; J. B. Warriner, Lehigh Navigation Coal Co., Lansford, Pa.; D. D. Moffatt, Utah Copper Co., Salt Lake City; secretary, J. F. Callbreath, Washington. The executive committee was made up of: Mr. Mather, Robert E. Tally, United Verde Copper Co., New York, and L. S. Cates, Phelps-Dodge Corp., New York.

□ □ □

William M. Berent has resigned from Flint Foundry Co., Flint, Mich., to take over the agency of the Pioneer Gasoline Co. for the Akron and Lockport, N. Y., districts with headquarters at 37 Clinton street, Akron, N. Y. Mr. Berent began his foundry career as a patternmaker, working in various foundries in and around Buffalo. He then served for one and one-half years as pattern shovel man in the foundry of the Gould Coupler Co., Depew, N. Y. On March 1, 1919, he became connected with the Flint Foundry Co. and in 1927 he was transferred to the Marshall, Mich., plant of the Flint company.

□ □ □

Earl C. Snell has been elected secretary, Griswold Mfg. Co., Erie, Pa. He had been personnel director. Charles A. Massing has been appointed sales manager.

Receiver for Penn Bridge

First National bank, Beaver Falls, Pa., has been appointed receiver for the Penn Bridge Co. of America,

Beaver Falls, Pa., structural fabricator. A bill of complaint set forth that the company had failed to pay interest on some bonds. Assets are estimated at $780,273 and liabilities at $500,000.

Financial News of Steel Industry

Granite City Steel Co., Granite City, Ill., has declared a regular quarterly dividend of 50 cents on the common, payable Dec. 31 to record Dec. 15.

□ □ □

Spang, Chalfant & Co., Pittsburgh, has declared the regular quarterly dividend on the preferred, payable Jan. 1, 1932, to record Dec. 15.

Higher Chicago Switching Rates Draw Protest

Chicago — Advanced interstate freight rates for the Chicago switching district became effective Dec. 10, making the rate on one-line hauls 3 cents, on two-line hauls 3½ cents, and on three-line hauls 4 cents, which is an advance of ½ to 1 cent.

Shippers contend these increases penalize shipments of scrap, coke and pig iron shipped from the Indiana area of the Chicago industrial districts. Carriers have a petition before the interstate commerce commission for reopening the case under section 13, which provides for an adjustment when intrastate rates are below interstate rates, but a date for a hearing has not been set.

Canada Body Optimistic

Mild optimism was expressed at the annual meeting of the Metal and Hardware association held at Montreal, Que., Dec. 8. B. W. P. Coghlin was re-elected president, R. W. Bartram vice president, H. Prudhomme treasurer, and H. T. Diplock, Leslie Drake, L. O'yley Hutchins, T. H. Gordon, J. D. Paxton and W. Beverly Robinson were re-elected directors.

Scrap Chapters Meet

Four chapters of the Institute of Scrap Iron and Steel Inc., New York, will meet in the week of Dec. 14 to discuss problems of the industry—the Cincinnati chapter Dec. 14, Cleveland-Detroit chapter Dec. 15, Chicago chapter Dec. 16, and St. Louis chapter Dec. 17. Benjamin Schwartz, director general of the institute, will attend all the meetings.

Obituaries

CLARENCE H. HOWARD, 68, for 25 years president for the Commonwealth Steel Co., St. Louis, died Dec. 7. He was born at Centralia, Ill., in 1863, and after graduating from Washington university worked four years as an apprentice machinist at North Platte, Nebr. In 1886 he became foreman, later general foreman, of the Missouri Pacific shops and then superintendent of the Missouri Car & Foundry Co. In 1890 he became general manager, St. Charles Car Co., and in 1891 he was made secretary of the Safety Car Heating & Lighting Co. with offices in St. Louis. He remained eight years and in 1899 became vice president of Shickle, Harrison & Howard Steel Co., St. Louis, later known as Leighton & Howard Steel Co. In 1902 this company was absorbed by American Steel Foundries and Mr. Howard was

Clarence H. Howard

made a vice president. He was president of Commonwealth Steel Co. from 1904 to 1929 and when it was merged with General Steel Castings Corp., Eddystone, Pa., and Granite City, Ill., he was made chairman of the board of the latter. He resigned in April, 1931. Mr. Howard was a member of the American Iron and Steel institute and had been honorary president of the St. Louis and National chambers of commerce.

□ □ □

Torrence E. Bissell, well-known manufacturer of agricultural implements, died at Guelph, Ont., Dec. 5.

□ □ □

Sloan Hess, president, International Machine Supply Co., Hamilton, Ont., died at Guelph, Ont., Dec. 8.

□ □ □

Oliver C. Smith, president, treasurer and general manager, Smith & Egge Mfg. Co., Bridgeport, Conn., maker of chains, died Dec. 7.

□ □ □

William J. Erdle, 59, president and treasurer, Erdle Perforating Co., Rochester, N. Y., died in Rochester Dec. 7. He was head of the company founded by his father. Mr. Erdle was a former member of the Society of the Genesee.

□ □ □

George S. Crosby, 84, retired metal worker, died at his home in Simonsville, Vt., Dec. 5. He began making malleable iron toys in Bridgeport, Conn., and later moved his factory to Brooklyn, N. Y., moving again in 1889 to Buffalo, where the business was expanded to include general stamping of sheet metals.

□ □ □

Walter W. Cheney, Jr., 43, vice president, director and superintendent, S. Cheney & Son, Manlius, N. Y., died Nov. 28. For a number of years he has been associated with the National Founders' association, American Foundrymen's association, Central New York Foundrymen's association and also was secretary, Syracuse & Eastern Railroad.

□ □ □

Charles MacVeagh, 71, former general solicitor and assistant general counsel, United States Steel Corp., New York, and former ambassador to Japan, died Dec. 4 at Santa Barbara, Calif. Since 1883 he had practiced law at New York as a member of Stetson, Jennings, Russell & Davis, being named assistant general counsel and general solicitor for the United States Steel Corp. in 1901. These appointments he held until President Coolidge named him ambassador to Japan in 1925.

□ □ □

Frank Moore, 72, engineer, inventor and long associated with Westinghouse Air Brake Co., Pittsburgh, died Dec. 6. Born at Central Bridge, N. Y., in 1859, he went to Pittsburgh in 1891 to enter the employ of the Westinghouse company. At his death he was consulting engineer for the company and has been a well known railroad equipment engineer by virtue of his many inventions, notable among which was the equal credit given him with George Westinghouse in the invention of the equalizing valve to the Westinghouse air brake. Mr. Moore organized and was for many years president of the Pittsburgh Malleable Iron Co., also the Zanesville Malleable Iron Co., and was president, Pittsburgh Machine Tool Co.

Here and There in Industry

WILSON-MAEULEN Pyrometer Division, the Foxboro Co., Foxboro, Mass., has been organized to effect a consolidation of the pyrometer and temperature control business of the Wilson-Maeulen Co., New York, and the thermometer business of the Foxboro Co., beginning Jan. 2, 1932. This merges two noncompetitive lines which supplement each other. The technical personnel in design, production and sales of the Wilson-Maeulen Co. will form the new division of the Foxboro Co. The Rockwell hardness tester, made and sold by the Wilson-Maeulen Co., will continue to be made in the machine shop and mechanical laboratory by the same company as heretofore, but to avoid confusion the name will be changed from the Wilson-Maeulen Co. to the Wilson Mechanical Instrument Co. Inc., 383 Concord avenue, New York.

□ □ □

Air Preheater Corp., Wellsville, N. Y., has appointed Irving M. Day, 308 Chandler building, Washington, its representative in the Southeast.

□ □ □

Barnet Bros., Buffalo, heating and ventilating engineers, have moved into a new and larger plant at 1282 Abbott road from 82 Geary street.

□ □ □

Universal Sand Equipment Co., Cleveland, has appointed H. M. Lewis Co., Jackson building, Buffalo, its representative in Buffalo territory.

□ □ □

Kissel Motor Car Co. assets will be sold at receivers' sale Dec. 21 at the plant in Hartford, Wis. George A. Kissel and Thomas L. Davison are receivers.

□ □ □

Automatic Screw Machine Products Co., Chicago, has been licensed by the Dardelet Threadlock Corp., New York, to manufacture nuts and screw machine products threaded with the Dardelet self-locking screw thread.

□ □ □

Jones & Laughlin Steel Corp., Pittsburgh, has moved its New York offices to the 500 Fifth avenue building, occupying about half the nineteenth floor. R. M. Kilgore is district sales manager in charge.

□ □ □

Ohio Power Shovel Co., Lima, O., has appointed W. C. Champion, 2244 First avenue south, Seattle, its Pacific coast manager, including British Columbia, Washington, Oregon, California, Idaho, Utah, Nevada, Arizona and western Montana.

□ □ □

Welding & Motor Parts Co., Erie, Pa., has taken over the Trojan Mfg. Co., Erie, manufacturer of washing machines. The two plants will be consolidated in the works of the welding company, according to R. A. Williamson, general manager.

□ □ □

Buerk Tool Works, 38 Pearl street, Buffalo, has leased a plant at 315 Grote street and will move there early in January. The company, organized 12 years ago, plans further expansion of its line of tools, dies and special machinery when it occupies its new quarters.

□ □ □

San Antonio Foundry Co., San Antonio, Tex., has moved its plant from 1425 South Alamo street to 500 Blue Star street. The new and considerably larger plant is situated between the Missouri, Kansas & Texas railroad tracks and the San Antonio river.

□ □ □

Mathews Mfg. Co., Worcester, Mass., has bought at bankrupt auction the name and goodwill of the Samuel Winslow Skate Mfg. Co., Worcester, and its plant equipment for the manufacture of ice skates. Manufacture of ice skates may be continued by the Mathews company.

□ □ □

Blacktop Equipment Corp., 940 Ash street, Johnstown, Pa., recently formed, will manufacture equipment for applying coating material to aggregate used in road building. Manufacture will be by contract. B. F. Faunce is president, George W. Warmoth vice president, Carl G. Hipp secretary and H. V. Brown treasurer.

□ □ □

Shampaine Aseptic Steel Furniture Co., St. Louis, has leased a plant at 1007 Russell avenue, expecting to start operation about Dec. 15. Abe Shampaine is president. He formerly operated a similar business under name of the A. S. Aloe Co., which was recently sold to the P. M. Steel Products Inc.

□ □ □

Widdicombe Engineering Co., Philadelphia, has been organized by Charles C. Widdicombe and Henry H. Tomlinson, formerly associated with the Shoemaker Bridge Co. The new company will furnish engineering service to contractors and architects. It has established offices at 1700 Samson street. room 600.

□ □ □

Stanley Mfg. Co. Ltd. has been formed at Toronto, Ont., as a subsidiary of Stanley Mfg. Co., Dayton, O., to be under control of Metal Etchers & Mfg. Co., Toronto. A plant is to be established at 514 King street east. R. E. Wakefield is president of Metal Etchers & Mfg. Co.

□ □ □

Northern Equipment Co., Erie, Pa., has appointed Irving M. Day, 306 Chandler building, Washington, its representative for its feed water regulators, differential pressure control valves, pump governors, condensate drainage controls and allied equipment. G. L. Simonds, Winter Haven, Fla., has been appointed its representative in Florida.

□ □ □

Surface Combustion Corp., Toledo, O., has taken an order from the Tennessee Coal, Iron & Railroad Co. for three continuous gas-fired walking-beam pack-heating furnaces for its plant at Fairfield, Ala. The company is also installing its largest size walkingbeam pack-heating furnace at the Weirton, W. Va., plant of the National Steel Corp.

□ □ □

Harvey Spring & Forging Co., Racine, Wis., has disposed of its automobile spring business, including one of its large shop buildings at Phillips avenue and the Milwaukee tracks, to the Standard Steel Spring Co., Coraopolis, Pa. The Harvey company retains the remainder of the plant and will continue manufacturing automobile springs for replacement, a line of forgings, wagon hardware and kindred products.

□ □ □

Sheldon, Morse, Hutchins & Easton has been formed in New York, with offices at 191 West Tenth street, by Dr. H. H. Sheldon, H. A. Morse, L. W. Hutchins and Dr. W. H. Easton. Its purpose is to serve as a service organization to facilitate marketing of industrial products. Special attention will be given to economic problems arising in connection with scientific research in the application and market for specialties.

□ □ □

James Kearney Corp., St. Louis, has acquired control of the National Duct Rod Co., Portland, Oreg.; Morse-Sterrett Products Co., Oakland, Calif., and the Chance Co., Centralia, Mo., all manufacturers of wire products and metal specialties. The plant of the National Duct Rod Co. will be moved from Portland to St. Louis and combined with that of the Kearney cor-

(Concluded on Page 78)

MIRRORS of MOTORDOM

DETROIT

THOUGH Ford's steel buyers continue a watchful waiting attitude on their blanket steel requirements for first quarter and had not made any commitments for that time, up to Friday, Dec. 11, a smaller tonnage continues to be released to several steel mills on orders that were entered several months ago.

This latter steel is not in sufficient quantity to justify the assertion that Ford will make 50,000 cars this month, nor 40,000, nor half that figure. In fact, it would be a matter for surprise if even 10,000 models of the new series were to be produced before the year end. However, the steel that is being released is known to be going into the assembly of 1932 Fords.

The larger order, for first quarter and about which most interest centers, is now fairly definitely slated to be split among at least ten steel mills. It will call for bars, small shapes, special frame stock, black, blue-annealed, cold-rolled and autobody sheets—that is, when it comes through.

Assemblies at Dearborn are not yet in line with all parts departments, some of which made parts for about 500 cars a day last week. At least the transmission has come out of Dearborn's engineers' hands and instead of the much experimented Borg-Warner free wheeling for 1932 models, a new form of syncromesh with spiral gears has been decided on.

Hudson-Essex has been experiencing difficulties with body dies on the production run of its new 1932 lines. It appears evident now that a first view of the new cars set for Dec. 20 will be delayed.

Pontiac division of General Motors resumed slowly during the week beginning Dec. 1 but assemblies are not attaining sizable proportions until this week. Pontiac will show a six and an eight for the 1932 shows.

Cadillac-LaSalle is on irregular production schedules, announcement of some refinements in the existing models it now offers expected in time for the New York show.

Eighty-four Cadillac eights, 63 LaSalles, 32 Cadillac twelves and four Cadillac sixteens constituted November's shipments.

Though Oldsmobile assemblies are scheduled to resume soon, the Olds, Cadillac and Pontiac divisions present the inactive side of the General Motors' assembly picture—Buick and Chevrolet the increasingly better production units so far in December.

Speed Chevrolet Output

Chevrolet is running close to Buick in point of output, the former averaging 360 cars, 5 days at Flint; the latter just over 600 cars a day, 4 days. Chevrolet, to produce the 37,000 models its present promised in December, will have to average 1625 cars each of the month's 22 assembly working days—a figure as yet not reached.

It is yet early to judge the public's reception of the Chevrolet, while Buick's capacity production is based on a month's earlier public announcement, good nation-wide registrations and an unfilled order book as of Dec. 1 for almost 18,000 units.

Chrysler's assembly lines by now have gathered quite a thick coat of dust. Continuing closed, last week, they are just about at the end of their inactivity, which began in mid-October. Resumption was promised for Nov. 1, but delayed. Even in October, Chrysler assemblies totaled only 200, so this division has virtually been closed since September. Dodge passenger car assembly lines are also closed.

There appears to be basis for the report Chrysler offering its Imperial eight series in the $1700 class next year; its low-priced eights in the $1200 division, thereby cutting prices.

Plymouth has been making about 300 cars a day, 4 days; the remaining Chrysler subsidiary, DeSoto, assembles about 70 models a day, 4 and 5 days a week.

Graham will announce its new cars Dec. 19. Prices already have been made public.

Hudson and Studebaker will spend $5,000,000 and $7,000,000, respectively, on advertising in 1932, both over 100 per cent increases from this year. . . . Edward G. Budd Mfg. Co., Philadelphia, aside from making steel automobile bodies, has taken a contract to build machines for making rayon yarn. . . . A corrosion-resistant steel dashboard is being experimented on to have considerable fluted work and greatly resembling the precision work in watch cases. . . . All of the display space at the Detroit automobile show, Jan. 23-30, has been contracted for. . . . Chevrolet sent out about 1,280,000 four-inch records to possible Chevrolet 1932 purchasers advertising the new automobile. . . . Great Lakes Steel Corp., while operating two of six open hearths, has been drawing from a bank of stocked ingots. . . . Kelsey-Hayes Wheel Co. is reported negotiating for the manufacture of washing machine tubs and had an inquiry out for enameling stock. The company also is looking about for a stamping plant here. . . . General Motors lines may all be expected to have a windshield bead of corrosion-resistant steel. . . . White Motor's recent order for over 770 trucks from New York will benefit 14 parts concerns directly. . . . Murray Body has been doing some work for Graham-Paige. . . . The airplane type tire for the automobile is being rather widely experimented with. It requires only 8 pounds air pressure and permits driving over curbs, if necessary. . . . Ford had a large list of tool room lathes out recently with a machine tool builder.

EDITORIAL

Open-Hearth Committee Shows the Way

ON PAGE 38 of this issue will be found the third and final article summarizing the discussion of steelmaking practice at the sessions of the recent Detroit meeting of the open-hearth committee of the American Institute of Mining and Metallurgical Engineers. A casual examination of the text of these articles will indicate the practical nature of the work of this organization and also will give a hint as to why its activities are unique in the field of engineering societies.

The open-hearth committee differs from the majority of other groups in that its membership, embracing open-hearth superintendents and others interested chiefly in open-hearth practice, is homogeneous to a unusually high degree. All of them approach the problems of steelmaking from the same viewpoint. They speak the same language, which is born of practical experience. The bond of common interest is exceptionally strong.

These factors combine to give the conferences of the committee a distinctive character which is not found in the deliberations of any other group. Although the organization is entering upon its eighth year, its sessions still are free from the undue formality, stiffness and pretense with which so many societies are afflicted. Whereas discussion in the meetings of many organizations is made difficult if not actually discouraged by the atmosphere of restraint, the presence of a few "star" speakers, or the arrangement of a program so full as to preclude extemporaneous comment from the floor, the deliberations of the open-hearth men are conducted in an environment which invites and encourages the humblest first helper to voice his opinion.

Free, Informal Exchange of Ideas Is Key to Success

Due to this simplicity and utter lack of pretense, the open-hearth sessions constitute a real forum, where ideas are exchanged and experience pooled for the benefit of all. The fact that the discussion is confined almost exclusively to practical every-day problems and is not complicated by theoretical or supertechnical debates also makes for a freer exchange of information.

It is safe to say that the activities of the open-hearth committee in its 14 semi-annual conferences have contributed much to the advancement in steelmaking practice in the past few years. It is doubtful whether the many economies introduced recently would have been adopted as widely or as rapidly if it were not for the opportunities for the exchange of experience which are afforded through the meetings of this organization.

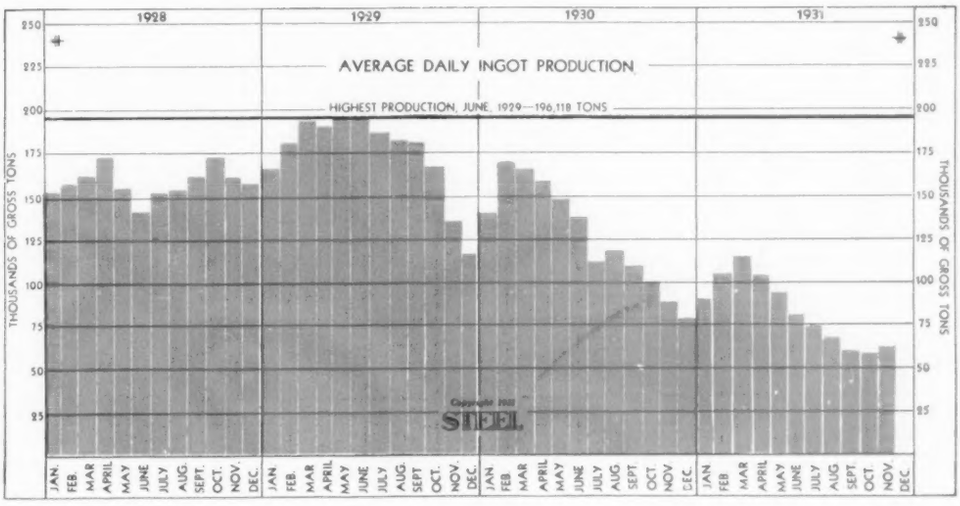
The success of the open-hearth committee raises the question of what other groups might accomplish if they would organize along similar lines. Already the open-hearth men have encountered problems in their discussions which cannot be acted upon effectively without cooperation with operating men in other branches of the steel industry. For instance, at the Detroit conference the possibility of producing bankable steel was introduced. From the standpoint of the steelworks it seems desirable to accumulate a backlog of banked ingots which can be drawn upon by the blooming mills when needed. The question is particularly important in the present period when schedules are uncertain owing to the slack demand. It would be helpful to the open-hearth superintendents if they knew the attitude of blooming mill superintendents on this practice. In the same way the interests of the steelworks operators are interlaced with those of blast furnace superintendents.

Blast Furnace and Mill Groups Can Profit by Example

In view of the numerous points on which blast furnace, steelworks and rolling mill practice touch each other, would it not be desirable to organize the blast furnace superintendents and the blooming mill superintendents along lines which have proved so successful by the open-hearth men?

If this were done the three groups would function to facilitate the advance of practice within their respective domains and at convenient intervals could participate in joint sessions to discuss interrelated problems. This arrangement, the possibility of which was hinted at the Detroit meeting, is worthy of careful consideration. In any event, those engaged in the operation of blast furnaces and blooming mills will do well to follow the example set by the open-hearth committee.

THE BUSINESS TREND



1930	
Nov.	88,489
Oct.	99,724
Sept.	109,245
Aug.	117,722
July	112,393
June	136,741
May	147,515

1931	
Nov.	63,747
Oct.	58,977
Sept.	59,523
Aug.	66,133
July	72,544
June	79,843
May	96,365

Attention Is Focused on National Budget

MIXED factors continue to lend uncertainty to the business situation. The few favorable indications that have appeared are offset by discouraging developments in other directions. Industrial leaders still are unable to peer through the veil which hides the future.

Among the influences bearing upon the present uneasiness are the continued evidences of insolvency and impaired earnings of railroads, the unbalanced state of the federal budget with its attendant threat of increased taxes, the undefinable feeling that congress somehow will complicate rather than simplify present problems and the fear of more trouble in Europe.

These are factors, which, seemingly remote from the manufacturer who is trying to keep in black ink in conducting his own business, nevertheless are closely associated with his success or failure. A few companies that are favored either by exceptional management or by fortuitous circumstances are able to do well in spite of these adverse general forces, but the majority of concerns cannot escape their demoralizing influences.

Detail of Increased Tax Burden Is Bitter Medicine

The President's message to congress introduces little that was not expected. Mr. Hoover's views on the problems of the day were so well known in advance that his message assumed the quality of reiteration. Of great interest to business is the detail of the budget submitted by the chief executive and the provisions of the proposed tax schedule explained by the secretary of the treasury. The suggested increase in the corporation tax from 12 to 12½ per cent, the removal of the exemption on small domestic corporations and the several so-called luxury taxes which will affect the cost of business communication will make sober reading for industrial executives.

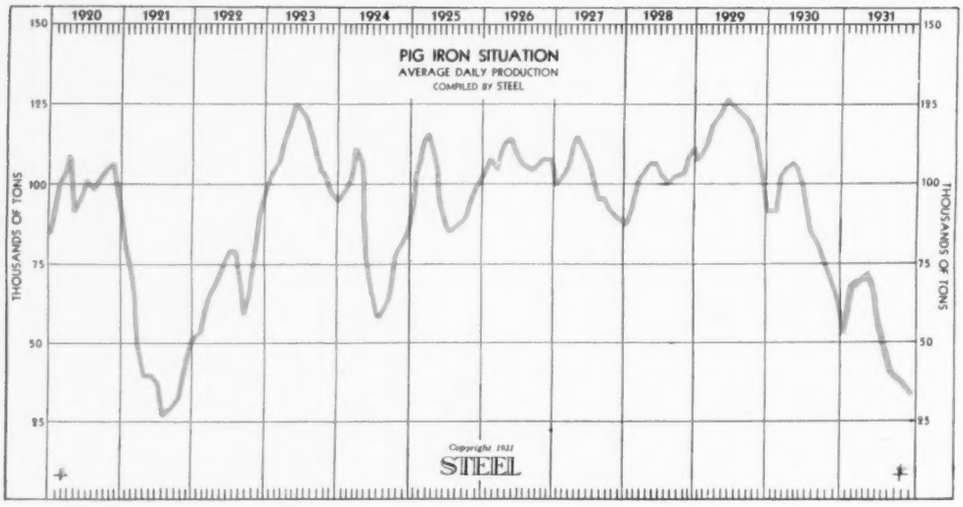
Early statistics for November are not especially reassuring. The most favorable barometer was the ingot output. True to predictions based on the weekly estimates of steelworks operations, production showed an increase. While the total for the eleventh month exceeded that of October by the bare margin of 1308 tons, the increase in the approximate daily average was 8 per cent. The gain in November interrupts a steady decline in seven consecutive months.

For Encouragement Read Records of Panics in Nineteenth Century

The record of wholesale commodity prices in November was discouraging. On Dec. 1 Bradstreet's index stood at $7.91, a drop of 17 cents from Nov. 1. Small satisfaction may be gained from the fact that this is the smallest decline in four months. The index now is at the lowest point since September, 1908, when the country was emerging from the depression of 1907.

In spite of the somber aspect of the statistical record there are occasional minor bright spots in each locality which tend to cheer business. The news of the past few weeks has embraced a number of rather remarkable orders and contracts. Inquiries in certain lines are distinctly encouraging.

The best antidote for pessimism over present conditions is to read reliable accounts of some of the experiences of 1837, 1857, 1873 or 1893. The calm of today shines in comparison with the disorders of those earlier dark days.



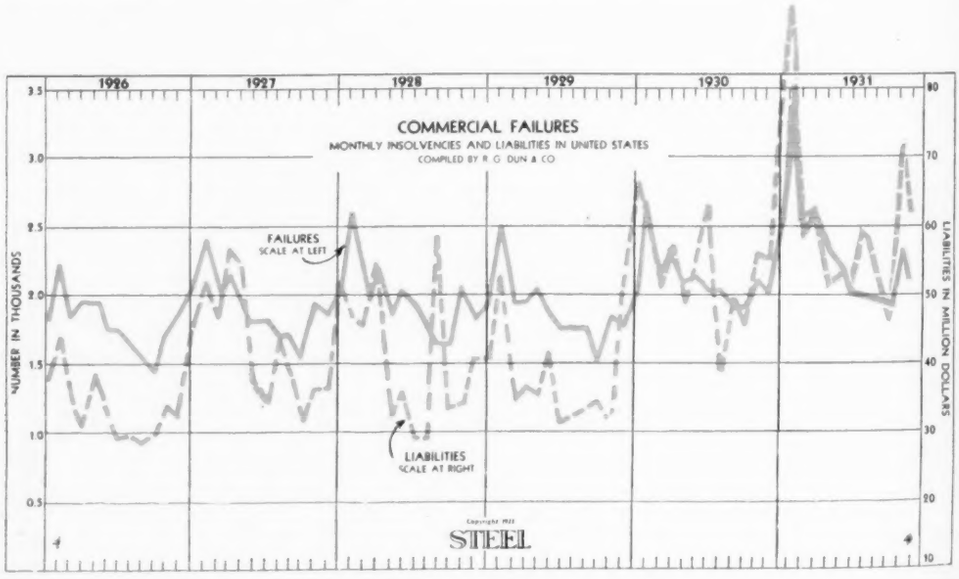
	Tons	
	1931	1930
Nov.	36,727	62,128
Oct.	37,831	69,851
Sept.	38,947	75,893
Aug.	41,264	81,455
July	47,170	85,110
June	54,599	97,817

Production of Pig Iron for Year Off About 40 Per Cent from 1930

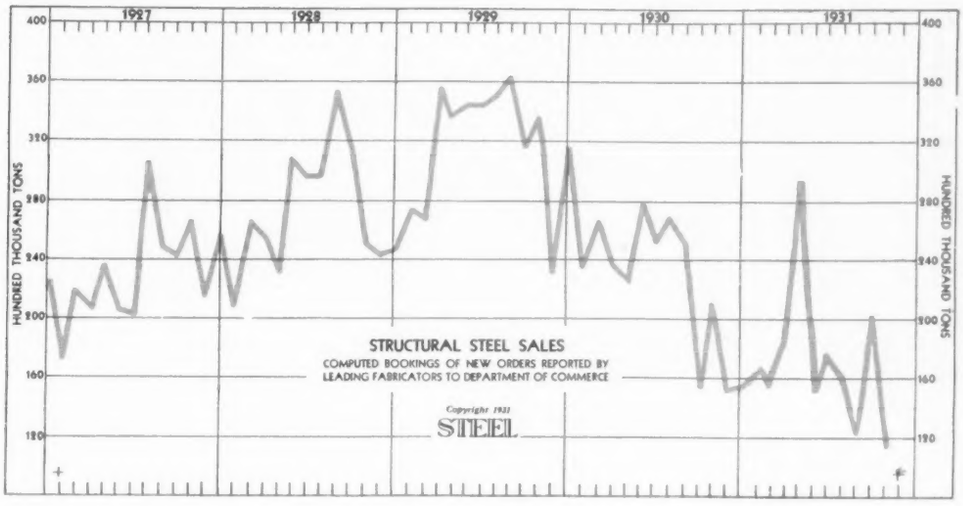
In November, for the seventh successive month, the average daily production of pig iron dropped to 36,727 gross tons, not only a new low for the year, but the lowest daily rate since the 32,859 tons of September, 1921. The all-time record low point in the trend occurred in July, 1921, with an average daily output of 27,892 tons. Total production in November amounted to 1,101,820 gross tons, 6 per cent, less than 1,172,781 tons in October. For the eleven months of this year, production has totaled 17,282,634 tons, compared to 29,775,733 tons in 1930, or a loss of 42 per cent. It appears that the current year will close with a total output of approximately 18,400,000 tons.

Report of Commercial Failures for November Is More Favorable

Commercial failures in November were considerably firmer than in the previous month. Insolvencies in the United States for November numbered 2195 compared with 2362 in October and 2031 in November of last year, according to the figures issued by R. G. Dun & Co. Liabilities in November also took a favorable drop, the amount involved being $60,659,612. This total compares with $70,660,436 in October. Insolvencies thus far in 1931 exceed those of any preceding year. For the eleven months of this year, failures total 25,527 with liabilities of $663,096,052. These figures cover only business defaults, and do not include individual bankruptcies or suspensions of banks.



Liabilities	
Nov., 1931	$60,659,612
Oct., 1931	70,660,436
Nov., 1930	55,260,730
Number	
Nov., 1931	2,195
Oct., 1931	2,362
Nov., 1930	2,031



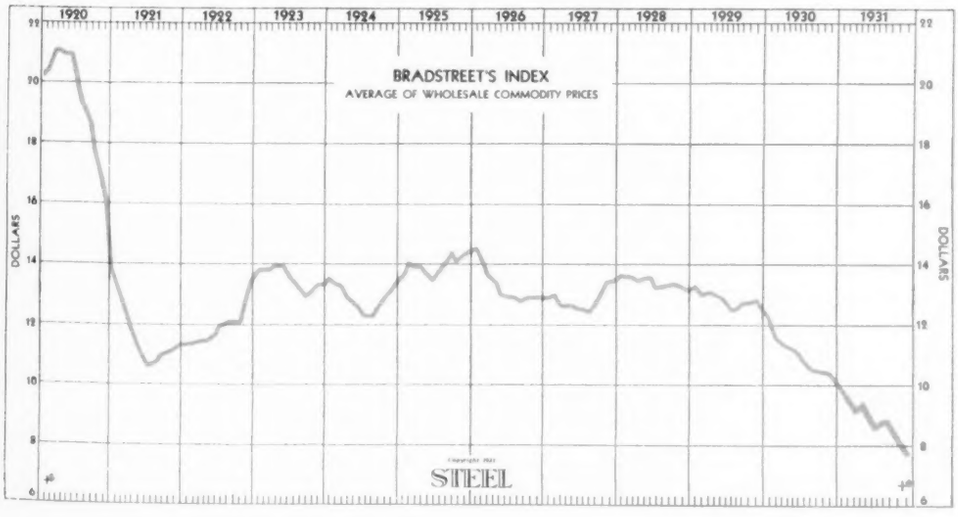
	Tons	
	1931	1930
Oct.	110,000	215,600
Sept.	196,800	155,600
Aug.	124,400	252,000
July	159,200	270,000
June	177,200	253,600

Structural Steel Bookings Dip Sharply From September Peak

Following the steep climb in structural steel bookings made in September, October sales dropped sharply to a new low for the year, according to reports of leading fabricators to the department of commerce. Orders for October totaled 110,000 tons or 27.5 per cent of capacity, compared to 196,800 tons or 49.2 per cent for September. In the same period last year bookings gained from 38.9 per cent in September to 52.3 per cent of capacity in October, while in 1929 the gain amounted to only 5.6 per cent. Shipments in October also dropped slightly to 145,600 tons, thereby establishing a new low for 1931. Shipments in ten months of 1931 averaged 40.1 per cent, while orders averaged 43.

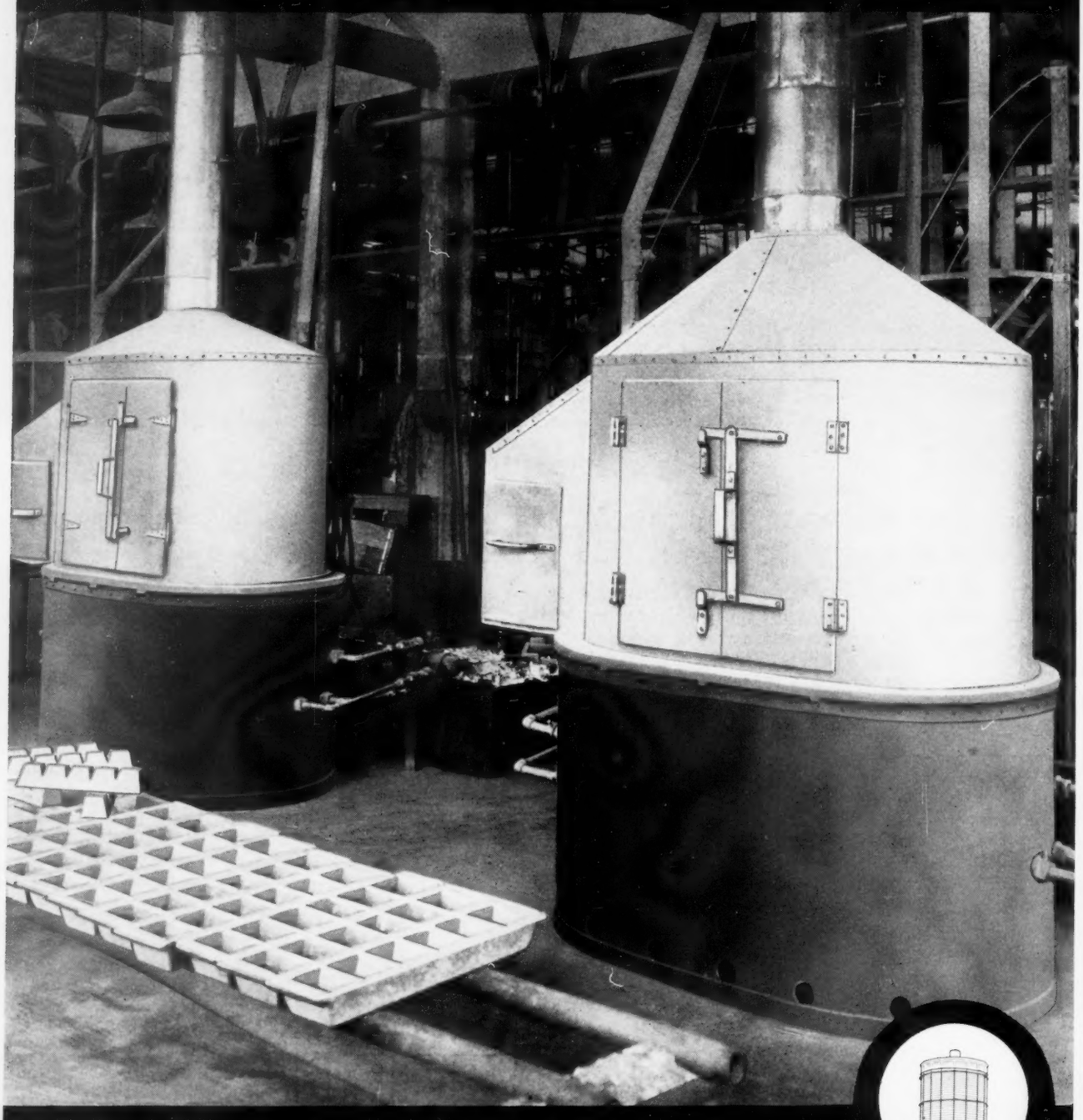
November Decline in Wholesale Prices Carries Index to 1908 Level

On Dec. 1 Bradstreet's index of wholesale commodity prices stood at $7.91, a drop of 17 cents from the figure Nov. 1. This makes the average for 12 months of the current year $8.76, which is the lowest annual number since 1911. The index number for December, however, is the lowest since September, 1908, when the country was fighting its way out of the 1907 depression. Bradstreet's has pointed out that if prices in this present period vary inversely as much as they did during the World war, the index may drop to as low as $6.50. This would carry the index back to 1897 levels. At the present rate of decline, the $6.50 level would not be reached until late in 1932.



	1931	1930
Dec. 1	$7.91	$9.84
Nov. 1	8.09	10.06
Oct. 1	8.30	10.30
Sept. 1	8.49	10.43
Aug. 1	8.79	10.45
July 1	8.78	10.56

METAL REFINING



Gas is acknowledged the best fuel for metal refining. Temperature is accurately controlled. Gas promotes longer pot life; there are no combustion products to interfere chemically; and the recent development of new equipment makes for increased economy. Send for the new book "Gas Heat in Industry".

AMERICAN *Gas* ASSOCIATION

420 Lexington Avenue, New York

GAS FOR HEAT WHEREVER HEAT IS NEEDED

Motors and Control for Rolling Cold Strip Steel

BY FRANCIS MOHLER
General Electric Co.

Part II

DISCUSSION of methods for maintaining tension on strip between mill stands in cold rolling operations and description of a typical cold strip mill are presented in the accompanying article, the second of two installments, the first of which was published in the Nov. 30 issue of STEEL. The author is associated with the industrial engineering department of the General Electric Co., Schenectady, N. Y.

IN THE first installment of this article (STEEL, Nov. 30) the broad statement was made that tension between stands is necessary for the rolling of Class II strip, and the adaptability of adjustable potential control to tandem mills that require tension between stands was outlined in a brief way.

A detailed consideration of this subject, outlining the effect of tension on the strip, is interesting, but this discussion will be limited to the various methods of motor control used for maintaining tension.

The following schemes are the ones used most frequently: (1) Motors with "drooping" speed-load characteristics; (2) constant current regulators; and (3) idler rolls between stands—operating motor field rheostats, or operating regulators.

It should be self-evident that maintaining a definite and accurate tension, between stands, is impossible with any scheme that depends upon the input to the mill motor for an indication of the amount of tension on the strip. The total load on any motor will be the sum of the "rolling" power required to reduce the metal in that stand, and that required to place the strip under tension. Furthermore, the power required for tension is usually a small part of the total, and if a constant input to the motor is maintained, a relatively small change in the "rolling" power will make a considerable change in the amount of tension held. When such methods are used, therefore, the tension will be held constant only as long as the "rolling" power is constant. Variations in this power because of changes in draft, or composition of the steel, may be so great as to cause the complete loss of tension or the actual breaking of the strip. Therefore, any electro-responsive means for controlling tension is at best a makeshift.

A positive method of maintaining tension must be a function of the actual tension in the strip measured by some mechanical device, such as a spring supported idler roll whose position is an indication of the tension.

With the foregoing in mind, it will be possible to discuss the various methods briefly. With regard to the first method in which motors with drooping speed-load characteristics are used, one of the simplest methods of attempting to hold tension is to use motors whose speeds will decrease with an increase in load. Such a speed-load characteristic can be obtained by using a compound field winding on the motors; or by using series exciters in connection with the motors; or by inserting a small amount of permanent resistance in the armature circuit. Usually a decrease in speed of 10 to 15 per cent from no load to full load is satisfactory. One difficulty with the compound wound motor is that the droop in speed for a given load is not constant for various speeds, but depends upon the shunt field strength. Thus a motor having 15 per cent regulation at maximum speed may have only 5 per cent regulation at basic speed. The series resistor gives a constant percentage speed regulation but occasions some power loss. The series exciter can be adjusted to give an approximately constant percentage regulation.

With any of these arrangements the operation is as follows: Referring to the diagram on page 32 of the first installment of this article and assuming that the mill is running, the strip is placed under the proper tension by weakening the shunt field of each succeeding stand, following stand No. 1. The operator judges this tension by the increase in load current on each motor and by watching the strip

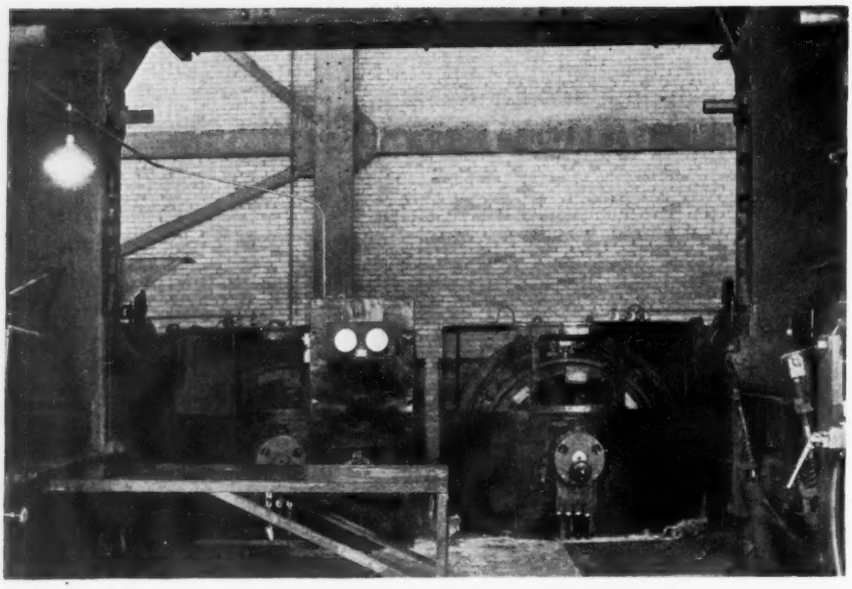


Fig. 1—Two 500-horsepower, 250/750 revolutions per minute, 250-volt direct-current motors, each driving stand of large tandem cold strip mill

itself. If the load on motor No. 1 increases because of a hard or thick spot in the steel, its speed will decrease, placing the strip between stands No. 1 and No. 2 under a greater tension. This will increase the load on motor No. 2, causing it to run at a slower speed. It is evident that motor No. 3 will slow down in a similar manner. The action of the various stand motors may be analyzed similarly as the hard spot enters the other stands. Although this method does not maintain a constant tension on the strip, it usually prevents breaking of the strip or placing it under a prohibitive strain, and has been used with satisfactory results.

Constant Current Regulators

The second method, involving constant current regulators, may be used to maintain a constant input current to the motors following motor No. 1. If the strip between stands is placed under tension, it is evident that the total input current for motors No. 2 and No. 3 will be the sum of that required for actual rolling and that required for tension. If the load on the motor increases because of a hard spot, the tension will decrease between that and the preceding stand. This method therefore protects the strip, but constant tension is dependent upon the uniformity of the steel.

In the third method, with idler rolls between stands, a roll may be placed between stands in such a way that its position indicates the actual tension in the strip passing over it. This indication may be used to control the speed of the corresponding motor so as to maintain a constant tension by means of:

(a) Operating motor field rheostats—The idler roll may be so connected to the motor field rheostat that the corresponding motor will be slowed down when the tension increases, and speeded up when the tension decreases. This is somewhat of a compromise because of the mechanical difficulties and the rather slow response of the motors to small changes of the rheostat setting.

(b) Operating regulators—Instead of operating a rheostat the idler roll may actuate a regulator which controls the corresponding motor field and thereby the motor speed and tension applied to the strip. This scheme has been applied to a Steckel cold strip mill for maintaining hold back tension on the strip, and has proved satisfactory.

Numerous modifications of the foregoing schemes have been made, but this brief outline will give an idea of the possibilities.

Many mechanical difficulties are involved in using mechanical devices for maintaining accurate tension on the strip, and it is probable that use will be made of the compromise methods of drooping speed or constant input for some time. This will, no doubt, invoke considerable discussion in the future.

Typical Installation

A description of an actual installation of a modern cold strip mill may prove interesting and give some idea of the equipment involved. In the mill to be described every effort has been made to obtain flexibility of operation.

There are two three-stand tandem mills, each of which is driven by a 500-horsepower, 250/750 revolutions per minute, 250-volt motor, as shown in Fig. 1, and several single-stand mills. Power for these motors is supplied from motor-generator sets located in a separate control house, a general view of which is shown in Fig. 2. There are two 1250-kilowatt generators, one for use with tandem mill No. 1, and the other for tandem mill No. 2. The switching is arranged so that either generator may be used for either tandem mill in cases of emergency. The large generator in the foreground is a 1500-kilowatt generator for supplying constant potential to the single stands, cranes and other auxiliaries.

Under normal operating conditions the adjustable potential type of con-

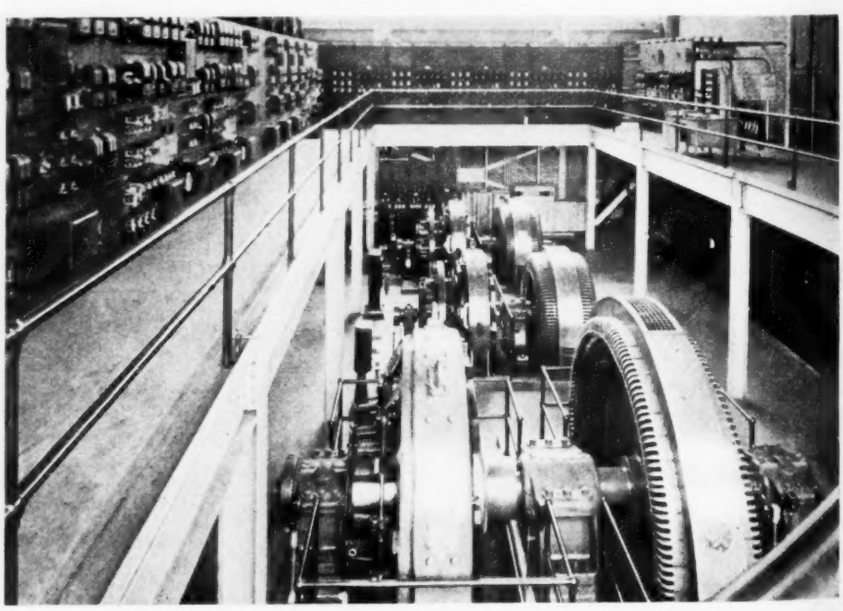


Fig. 2—Cold strip mill substation containing two 1250-kilowatt motor-generator sets for adjustalbe and constant potential power supply; also high voltage switching, screwdown, accelerating and tension regulator control panels, at left

trol is used on the tandem mills. However, the control is arranged so that in cases of emergency, the tandem mills can operate under the constant potential system. In such a case the tandem mill motors are transferred to the constant potential bus supplied by the 1500-kilowatt generator. Additional power, if required, is obtained through a tie-line panel from other generating apparatus in the mill.

In order to conserve space and simplify the bus structure, the motor line, generator line, distribution and transfer switching panels are located on the main floor, as shown in Fig. 4; and the accelerating, reel control, and regulator panels are located in the gallery as shown in Fig. 3. The starting resistors for the mill stand motors (when operating "constant potential") can be seen in the steel frames located above the accelerating panels.

Controls Centralized

On page 31 of the first installment of this article, the finishing end of tandem mill No. 1 is shown in operation. It can be seen that the strip is under considerable tension. The pushbuttons for stopping, starting, accelerating up to running speed, and decelerating the entire mill down to threading speed, for operating the roll screwdowns, and for controlling the reel, can be seen mounted on the mill housing. The handwheels shown on the mill housing are used for adjusting the tension between stands No. 2 and No. 3, and between stand No. 3 and the reel. The instruments in the background indicate the speeds of the reel and stand No. 3, the reel motor and stand No. 3 motor currents, and the generator voltage. The lever shown just below and to the right of the reel drum operates the band brake for expanding the reel drum during threading. The foot operated pushbuttons just below are used for slowing down the reel just before the slack is taken up, and for stopping the reel at the end of a coil.

It is interesting to note that constant current regulators are used in connection with this mill to maintain tension between stands, but that extremely good results have been obtained with straight shunt wound motors having as little drooping speed-load characteristic as possible.

In conclusion it can be said that flexibility of control and ease of operation are the most important factors in production.

Fig. 4—Main control board in large cold strip mill, with line panels for stand motors, and direct-current power distribution and control panels

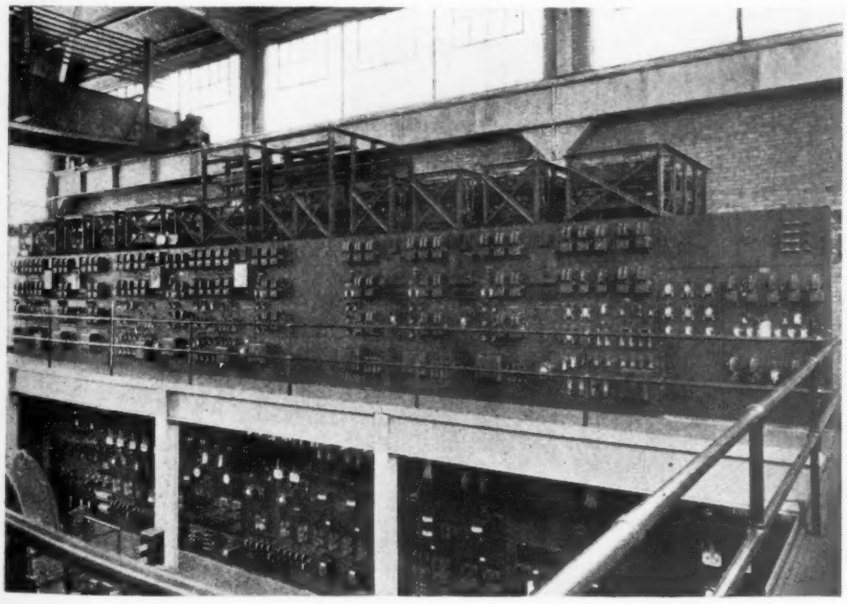


Fig. 3—Cold strip mill substation with main line and direct-current distribution panels on main floor and stand motor accelerating, reel and tension regulator control panels on gallery, shown also at left of Fig. 2

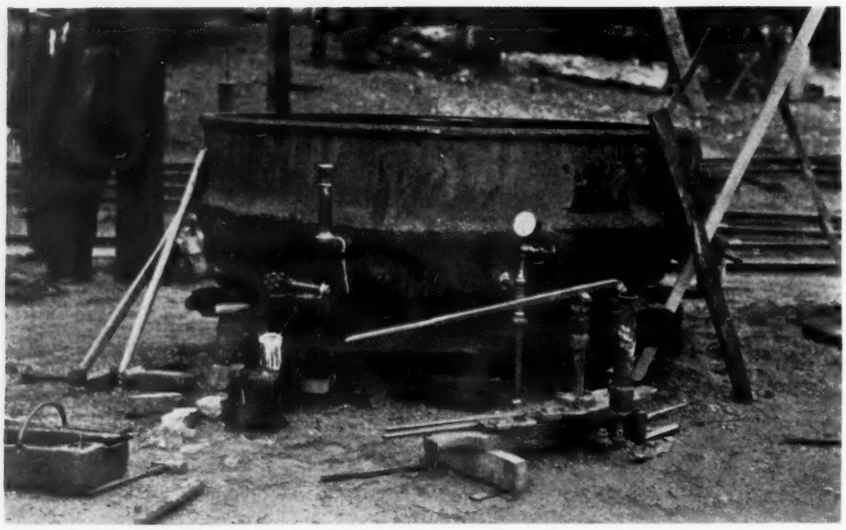
Investigates Kiln Marking Of Fireclay Brick

When clay brick are fired in the usual manner, there occurs during heat treatment a volume change which may result in either a larger or smaller brick than the original size. The changes which take place are dependent upon many factors, some of which are particle size of the clays, percentage of flint and plastic clay, and process of manufacture, and more specifically upon the nature of the clays themselves and the firing treatment.

Inasmuch as kiln marking is caused by the changes which occur during firing, it is obvious that many factors may be involved. This subject of kiln marking is discussed by S. M. Kier, vice president, General Refractories Co., Pittsburgh, in bulletin No. 30 just issued by the American Refractories institute, Oliver building, Pittsburgh.

According to Mr. Kier, there are two distinct types of marking. The first and major one is the deformation or compression of a portion of the brick, resulting from the load which it has to carry in supporting the upper courses during firing. The second results from "secondary expansion," an expansion which occurs at comparatively low temperatures and is not indicative of over-burning or vitrification.

It is suggested that to overcome troubles of kiln marking and to insure maximum life in service, the brick should be fired at a sufficiently low rate so that they "do not know they are being burned," and at a temperature sufficient to remove shrinkage.



Setup for a hydrostatic pressure test of a large welded steam-jacketed kettle

Six Methods Now In Use for Nondestructive Weld Tests

METHODS for testing welds are classed in two general groups—destructive and nondestructive. In the latter group are included hydrostatic pressure tests, air pressure tests, low-pressure tests, reheating tests, stethoscope tests and X-ray tests. An article in the September issue of *Oxy-Acetylene Tips* describes the salient features of each of these methods for the nondestructive examination of welded materials.

The equipment for hydrostatic pressure testing consists of a pump, a pressure gage and the necessary piping connections. The setup for testing a welded steam-jacketed kettle is shown in an accompanying illustration. Pumps used are relatively small in size and convenient to use, with pressures up to 6000 pounds per square inch being easily obtainable.

Hammered While Under Pressure

Procedure for the test is to close all outlets to the vessel, then operate the water pump until the desired pressure is reached, this being usually about 1½ times the normal working pressure. In the case of a pressure vessel, specifications may call for a hammer test while the vessel is under pressure of twice the designed working pressure. The weight of the hammer in pounds should be equal to the shell thickness in tenths of an inch, and the blows should be struck at 6-inch intervals on both sides of the weld for the full length of the seam. This is followed by a thorough visual inspection. The hydrostatic pressure then is raised to three times the designed working pressure and the seam again inspected.

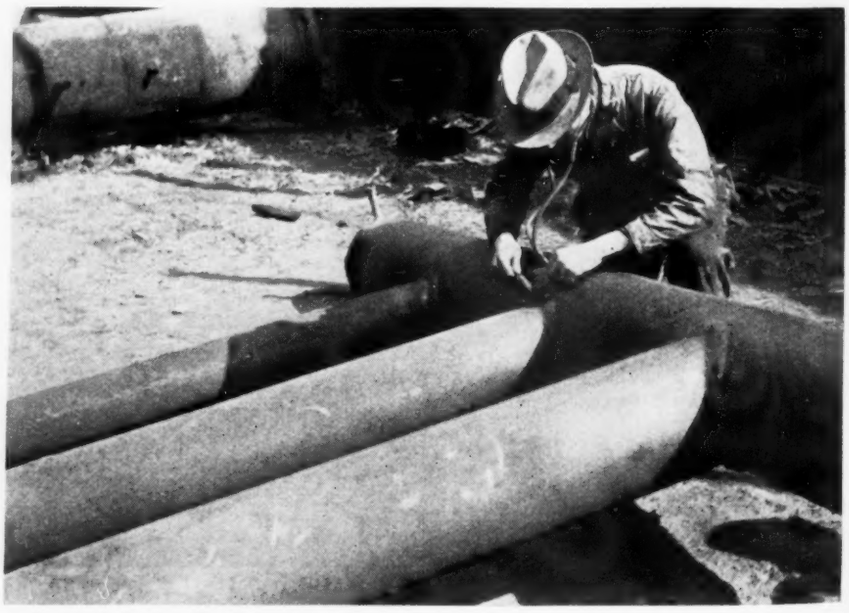
In the case of pipe lines for oil and gas it is difficult to obtain the required amount of water to fill the line and also difficult to drain the water from the pipe after a test; hence the hydrostatic test is inconvenient and the air pressure test is used. A section of the line is blanked off by means of bull plugs or other suitable closures and after attaching pressure gages, compressors are placed in operation until the required test pressure is built up in the line. Each weld is painted with soapy water and carefully inspected for bubbles which would indicate pin-hole leaks. Occasionally the weld is hammer-tested under pressure; and often the pressure is maintained for a certain time interval to ascertain the soundness of the pipe.

Testing of low-pressure tanks, particularly aluminum fuel tanks used in aircraft, is usually done by means of air at pressures of around 4 to 5 pounds per square inch. The welds may be painted with soapy water or the entire tank submerged in a large vat of water to locate definitely any leaks.

Heating Reveals Flaws

For light-gage sheet metal products which cannot be subjected to pressure tests a nondestructive test may be carried out by heating the entire length of a welded seam with a blowpipe gradually and evenly to a medium heat. A perfect weld will show up as a uniform unbroken darker strip in the heated area, since the weld is thicker than the adjacent sheet metal and requires a longer time to be heated to the same brilliance. Bright spots in the darker weld area are indications of defects or incomplete fusion between base metal and weld metal.

A physician's ordinary stethoscope may be used successfully in detecting serious defects in welded tanks and vessels. The apparatus, shown in use in an accompanying illustration, is equipped with a gum rubber tip to exclude extraneous sounds and give contact on the irregular surface of the metal. The drum, pipe or plate under test is struck with a small hammer at the spot to be tested. The weight of the hammer and the force of the blow



Testing welded pressure piping by means of a stethoscope and a small hammer

depend upon the thickness of the plate, and the stethoscope is applied to the tank in the general vicinity of the striking zone.

The sound heard at the instant of first tapping the joint is critical and is a function of the character of the metal at the spot struck. The sound wave due to the tapping is reflected and picked up by the stethoscope. When a defect is serious it has a damping effect on the total sound so that its presence is clearly evident in the after ring. The practiced ear of the tester is soon able to note any irregularities after applying his stethoscope to various points on the plate.

Technique and equipment for X-ray testing of welded products have recently been developed to a point where this method is being applied in the routine testing of large welded pressure vessels and similar products upon which it can be used advantageously.

Improves Carrier for Lifting and Moving Sheets in the Mill

IN THE manufacture of sheets every mill finds it necessary to provide some rapid and efficient means for lifting and moving sheet packs, sheet plies and sheet bar piles. Sheets must be moved from one mill to another, deposited on annealing bottoms, transported to and from squaring shears and resquaring shears and transferred to the shipping department. In addition, certain miscellaneous handling operations always arise from time to time.

To meet the demands of this service, the United Engineering & Foundry Co., Pittsburgh, has developed an improved carrier or sling, consisting briefly of an arrangement of two pairs of tongs connected together with an operating arm to open or close them and a U-bolt to engage the hook of a traveling crane. The carrier is built into one compact, light, strong and simple unit.

Operated by One Man

The center of gravity is so placed that the tong hooks naturally swing upward toward the pack; the greater the lifting power, the greater the force of the hooks into the pack. Whether idle or in operation little headroom is required, as can be seen from the illustration appearing at the right.

One man operates the entire mechanism, whether large or small, by means of the convenient operating arm which is connected through toggles of proper leverage to make his work easy. The operating arm scarcely protrudes in any position beyond the outer line of the tongs, and parts are so dimensioned as to occupy little room and yet retain high strength. As a result, the carrier can be lowered between closely spaced piles and more sheets can be stored in a given floor area.

The carrier can be left at any point in the mill, yet the crane man can pick it up with his hook without floor labor. When loaded, each edge of the pack is supported uniformly at all points by continuous channel construction with no sagging.

All parts are made of rolled steel with the permanent members hot riveted together; working and wearing parts are bolted. The carrier is available in 10, 15 and 25-ton capacities, the larger sizes being equipped with counterbalance springs to lighten the work of the operator, furthermore, the springs are adjustable to insure correct balance at all times.

Seek New Standards for Refractory Materials

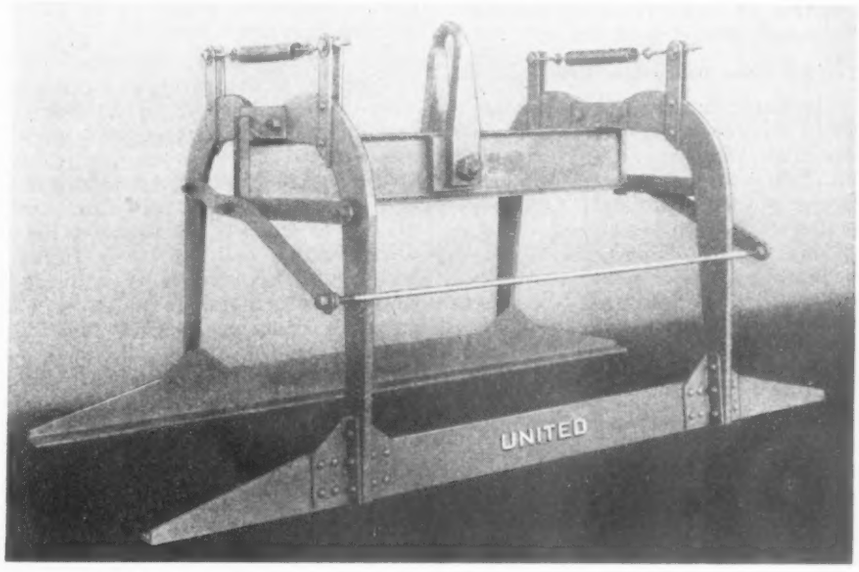
Increasing quantities of ground and crushed refractory materials are being bought on screen specifications and for this reason it has seemed appropriate that a standard sieve scale and methods for making both wet and dry sieve analyses be determined. The matter was submitted to committee C-8 on refractories of the American Society for Testing Materials, meeting in Cleveland recently, and after some discussion the subject was referred to the subcommittee on research for its recommendations.

The importance of the formulation of standards to measure the different physical properties of refractory heat insulating materials, in addition to their characteristic property of heat transfer, was pointed out at a previous meeting of the committee C-8. It was decided to proceed with this work and a suggestion was made that the committee extend its membership to include men particularly qualified in the manufacture, use and knowledge of properties of these refractory materials. Physical characteristics of refractory insulating materials which are of interest include: Cold crushing strength, transverse strength, shrinkage, impact resistance, hardness, crushing strength under heat and expansion under heat.

Alloyed Steel Screening Is Abrasion Resisting

Abrasive resisting steel wire screening is a new development of John A. Roebling's Sons Co., Trenton, N. J., this product being intended for use where abrasion is unusually severe. The product has been designated Jersey Abraso EE spring steel and is said to be especially adapted for use in vibrating, rotary, shaking and gravity screens.

The new abrasive resisting alloyed steel is made by a special process and is being supplied in practically all specifications from 6¼-inch openings down to 18 meshes per linear inch.



Improved type of carrier for use with a crane in lifting and moving piles of sheets and sheet bar

European Mills Keep Pace With Industry's Progress

EVEN though a man visit European steel works regularly every summer, he will not be able to see all that is new, because it is physically impossible to cover the whole territory in one summer, in the opinion of Prof. W. Trinks, chairman, executive committee of the iron and steel division of the American Society of Mechanical Engineers. Prof. Trinks presented the European supplement to the progress report of the iron and steel division for 1931, at the annual meeting of the mechanical engineers' organization in New York, Nov. 30-Dec. 3.

Furthermore, if each plant is visited once every three years, an innovation found at the occasion of a visit may be almost three years old and still be new to the visitor. For this reason, Prof. Trinks stated that his report on European developments should be accepted with caution, since it was based upon his personal observations.

Continuing his discussion, Prof. Trinks mentioned that about two years ago, a large tube mill in Germany adopted a phenol-formaldehyde condensation product similar to bakelite for rust proofing pipes. The material had the disadvantage that it had to be baked, which fact was inconvenient for welded or screwed joints. The material in question has been superseded by chlorinated rubber, which is dissolved in benzol. It is brushed by machine on the pipe both inside and outside. The coating protects the pipe against acids and alkalis. The process will be open for licensing in the United States after the patent situation is cleared.

Perfects Extrusion Process

The same tube company has perfected its process for extruding seamless tubes. The process is a few years old, but troubles with the material of the dies and plungers have prevented its commercial use. These troubles have now been largely overcome and a die now makes 500 tubes. The plunger or internal die lasts through the extrusion of 900 tubes. A tube of 2¼-inch outside diameter, 20 feet long, is extruded in 2 seconds. At present, the tubes are reheated before they are rolled down continuously in reducing or "sinking" mills to ⅜-inch gas pipe. A new press is being installed, however, to extrude 4-inch tubes, which will be rolled down without reheating.

The same condition, with regard to relative newness, applies to the expanding mill which uses a tension mandrel. It is several years old, but high class tubes of absolutely uniform wall thickness have been made only recently. Tubes are expanded up to 24-inch diameter, beginning with a 13-inch tube blank.

In the production of seamless tubes, the quality of the steel heretofore has had to be excellent. As a matter of fact, people bought seamless tubes because the very existence of a seamless tube was a guarantee of good material. Apparently, the piercing mill accentuates initially existing flaws in the steel. To circumvent this troublesome dependence upon the material, the tube mill at Ansin, near Valenciennes, France, has built a large press in which the ingot is pierced by a plunger before it is cross-rolled. What used to be the piercing mill has now become an expanding mill.

Seamless Drums Rolled

The United Steel Works has improved the Roeckner process of rolling seamless drums up to 22 feet in length and 44 inches diameter, in thicknesses up to 3 or more inches. The smallest possible wall thickness is at present 1 3/16 inches, because of the difficulty of keeping thin tubes hot while rolling. Heretofore the drums had a deep grooving from the cutting in rolls, on the inside. This grooving is now removed by a second pass. An innovation in the making of superior strength drums consists in boring out a solid ingot, reheating, and rolling on the Roeckner mill. For such drums, prices up to $170 per ton have been paid.

One of the most interesting developments is the automatic welding of wide-flanged beams by automatic machinery. The flanges have nosepieces between which the web is inserted. Carbon electrodes melt part of the nosepieces, fastening the flanges to the web partly by resistance welding and partly by fusion welding. The plan is to roll medium sized girders, up to 12 by 12 inches, for instance, and to weld the larger ones.

While these developments are outstanding and spectacular, much detail progress has been made, and previously mentioned processes have been placed on a commercial basis.

For example, the method of blowing blast furnace dust back into the furnace at a good distance below the stock line, by means of compressed gas, may be cited. This process is over two years old but has given a good account of itself and is now commercially perfect.

Operation of the five valves of a blast furnace is slow. These valves are the valves for gas and air, the snort valve, the cold blast, and the hot blast. A pneumatic control has been introduced in which a fraction of the turn of a handwheel causes these valves to move automatically in the right sequence, and without loss of time. This development, as are most of those previously mentioned, is a few years old, but the original designs were a bewildering maze of pipes; and it is only within the last year that simplifications have been effected which make the control useful.

Study Ingot Handling

In blooming mill practice, attention is being paid to the possibility of bringing the ingot to the mill either small end first, as is done in this country, or else big end first. While the reasons are purely metallurgical, the means for accomplishing the desired end are purely mechanical. The ingot tilter can tilt forward, as is usual in the United States, or backward, away from the mill. In the latter case, the tilter is turned through 180 degrees and presents an unbroken roller table all the way to the mill.

A process in which the mechanical engineer is interested only by furnishing the equipment, is a method of regaining sulphuric acid from pickling tanks by crystallizing out the iron sulphate. This desirable separation is accomplished by two stage cooling and stirring. In the low temperature stage, brine is circulated, necessitating the use of a refrigeration machine. The iron sulphate crystallizes like granulated sugar. The finished mass is emptied on a chromium-iron sieve through which the acid percolates, and upon which the sulphate is retained. This method should help to prevent the dumping of sulphuric acid and iron sulphate into rivers.

While engineers in this country take pride in their multi-pass continuous mills with horizontal and vertical rolls, it must be admitted that a mill has been developed in Germany which, to use a slang expression, goes us one better. The housings that carry the vertical rolls rest on slides that are inclined at 45 degrees with the horizontal. A screw adjustment slides the housings on these inclines. In consequence, corresponding passes in the vertical and horizontal rolls are brought into correct alignment by a single adjustment. The motors for driving the vertical rolls are located on top of the housings, which consist of four columns. Motor and drive can be swung out of the way quickly for changing rolls.

Timken Bearings *Assure Better Performance and Full Protection in Overhead Traveling Cranes*

When buying overhead traveling crane equipment, look to the track wheel bearings. Make sure that they are adequate for all modern requirements.

Timken Tapered Roller Bearings bring dual duty performance to bear on crane wheel operation with results no other type of bearing can duplicate.

They eliminate friction, thus saving power and lubricant, promoting smoother running and permitting quicker, more accurate crane handling.

And because they are designed to carry radial, thrust and combined loads at the same time, they protect the wheels against rapid wear, reduce wheel breakage, tend to prevent crane weaving and effect drastic reductions in maintenance costs.

All of these advantages are available to you through the exclusive combination of Timken tapered construction, Timken positively aligned rolls and Timken-made steel—the combination that has decisively licked all industry's toughest jobs in every type of machinery. Specify "Timken Bearing Equipped." The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN *Tapered Roller* **BEARINGS**

Open-Hearth Operators Study Quality of Rimming Steel

QUALITY control of open-hearth rimming heats may be effected by various methods, according to opinions expressed at the final session of the open-hearth committee of the American Institute of Mining and Metallurgical Engineers held in Detroit, November 23 and 24. Remarks of Dr. Hibbard, consulting metallurgist, Plainfield, N. J., dealing with the manufacture of rimming steel, included the statement that the bottom of ingot containing skin holes should be cropped when the steel is to be used for automobile sheets. Minimizing the height of skin holes on ingots calls for effervescence on teeming, he pointed out. His contention was that skin hole gas is controlled by the gas used in the furnace.

Proper charging, ore addition and the temperature of the bath contribute to the desired condition of the boil, he explained, and if the metal is top cast, the steel in the furnace must be more vigorous than when bottom poured. In regulating the rate of effervescence, he explained, there should be an adequate boil in the furnace, stirring of the bath should be limited and no gas solvent should be added.

Advocates Short Cool

Remarks from various open-hearth operators indicated that scabs and seams in rimming steel can be eliminated to a large extent by allowing the heats to cool down before teeming. Expression also indicated that the rate of pouring has an important bearing on the formation of seams. One operator stated that with furnaces on intermittent operating schedules, records indicate that seam trouble increases particularly when the steel ingots are taken from the banks. The practice employed at one plant in an effort to avoid seams is to allow the steel to cool for a short period in the ladle and then pour it into the mold as quickly as possible.

Mushy centers in rimming steel frequently are traceable to the capping of ingots, according to one operator, who pointed out that the caps should fit tight. Another operator expressed the opinion that mushy ingots arise in soaking pits.

A report of the steel mill committee, Society of German Steel Mill Men, dealing with an investigation on bath composition of open-hearth heats at varying heights within the bath, disclosed that little is known as to how far the mixing and deoxidizing phenomena as a consequence of the circulation of the metal in the bath and the speed of diffusion, influence the reaction within the furnace.

How Samples Are Obtained

The report showed that by immersing a lead-sheathed steel rod into the bath of open-hearth heats, samples can be taken representative to the whole cross section of the bath. It can be shown that considerable variation exists, especially in regard to phosphorus and sulphur, although copper is entirely uniformly dissolved. Furthermore, the chemical reactions between the slag and the bath occur with great velocity throughout the bath from the surface down to the bottom. Slags also show variations that become greater after additions of ferromanganese.

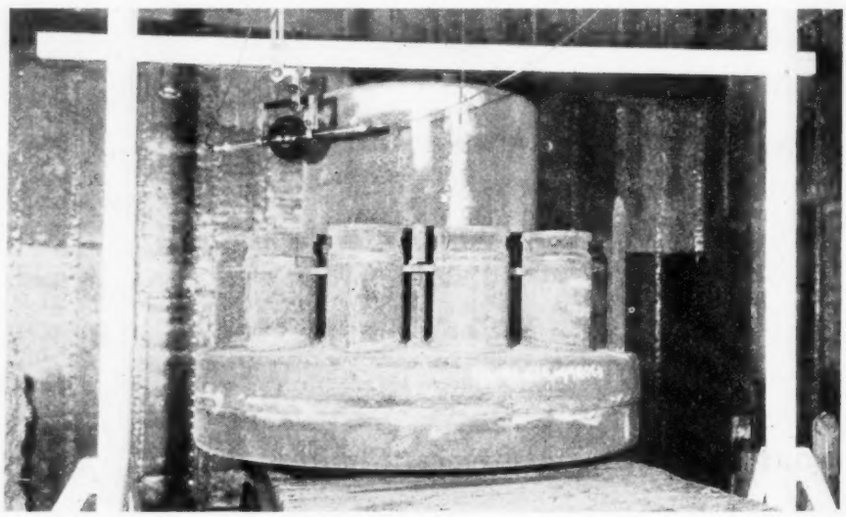
In conclusion the report disclosed that the depth of the bath has no influence on the velocity of the refining action due to the great speed with which equalization of the carbon content takes place within the bath. Sizes of pieces of ore are of no significance for refining action. Roll scale sinks through a slag of 4 inches maximum thickness when dumped from the charging box into the bath. Refining must be distinguished as direct and indirect, the report stated. Any ore may be utilized 100 per cent as far as sufficient carbon is present for its reduction, and the slag before the addition of the ore is in equilibrium with the bath in respect to the iron-manganese content.

Views On Scrap Usage Vary

A diversity of opinion exists as to what effect the use of scrap in a blast furnace has on the quality of pig iron. One operator maintained that he encountered sluggish conditions in the open hearth when pig iron made with scrap was used. On the other hand, an operator mentioned that the use of pig iron made with 16 per cent scrap has little influence on open-hearth heats. It was the consensus of opinion that the more scrap used in blast furnace burdens, the more iron was required for open-hearth charges.

Prevention of blisters in the galvanizing department, according to one operator, depends upon clean steel, the proper pouring temperature, and proper deoxidizing in the mold. Opinion expressed by another operator is that rising steel will give more blister trouble than steel that rises slowly in the mold.

Costs of chipping steels ranging from 0.15 to 0.20 per cent silicon amounted to $1.00 per ton compared to 60 cents a ton when steels contained from 0.08 to 0.10 per cent silicon, according to a recent investigation. Conclusions drawn were that the better the grade of steel, the hotter the steel must be heated to prevent high chipping costs.



X-RAY USED IN ELECTRICAL MANUFACTURING: Hidden defects in castings, welds and electric machinery, hitherto difficult or impossible to detect visually or by ordinary methods, are now revealed by the spotlight of the X-ray in what is claimed to be the largest laboratory of its kind in industry, recently added to the manufacturing facilities of the General Electric Co., Schenectady, N. Y. Illustration shows setup for X-raying a large casting. A 200,000-volt X-ray tube is used. The room is 24 x 26 feet by 17 feet high, carefully shielded with lead lining on roof and walls

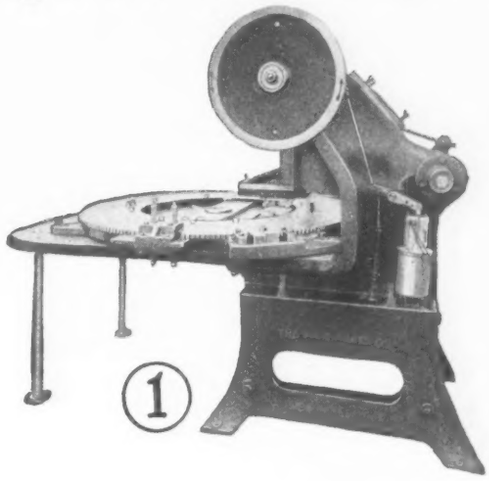
The G-E THRUSTOR—

an electric device that produces straight-line motion with a smooth, powerful thrust

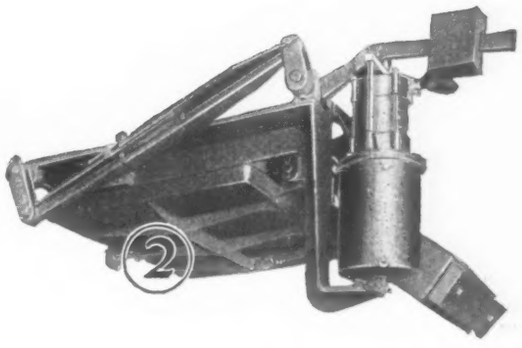
① Reduces Effort

② Simplifies Operation

③ Increases Production

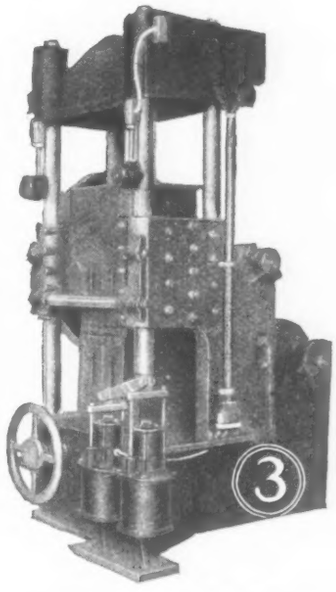


HERE are three applications where the new G-E thrustor is [1] reducing physical effort, [2] simplifying operation, [3] increasing production:



① Here, where a thrustor has been installed in place of a pedal, all operations are now directed by push-button control. Physical effort has been reduced.

② These batch gates originally were operated manually. Now the G-E thrustor permits them to be operated automatically from conveniently located push buttons — greatly simplifying operation.



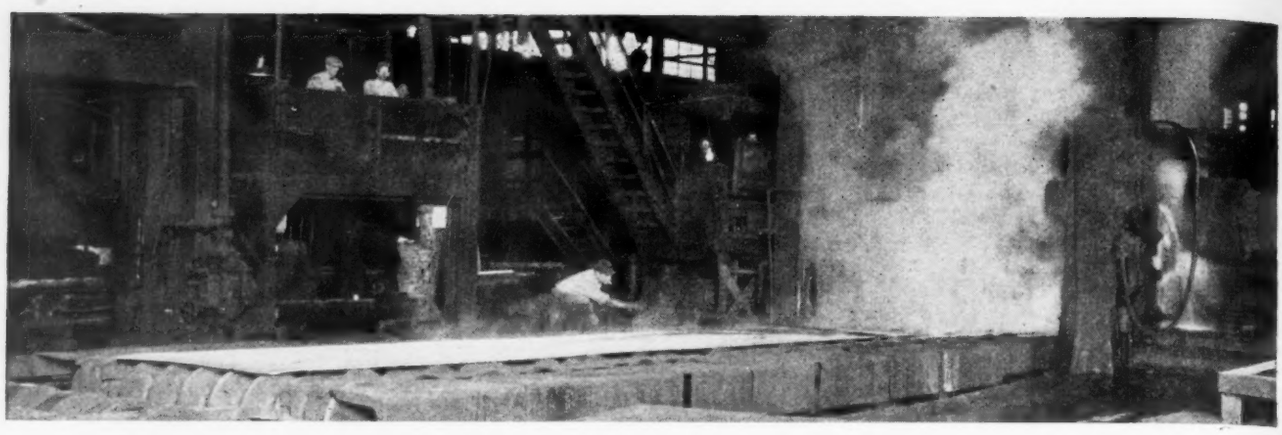
③ Formerly the operator of this embossing press stood beside the machine and threw a mechanical clutch in and out. The thrustor now enables him to load the machine, push a button, and then go to another machine while the first is performing automatically. Production in this case has been substantially increased.

You should have complete information on the G-E thrustor — and Bulletin GEA-1262A will give you just that. Ask your nearest G-E office for a copy.

301-84

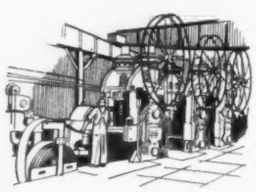
GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES



PROGRESS IN STEELMAKING

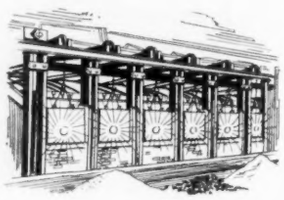
WHEN the tolerance for eccentricity of pipe couplings was reduced from 0.200 to 0.125-inch a short time ago some pipe mills found difficulty with existing equipment to meet this specification. With a recently developed machine, however, the boring, reaming and tapping operations have provided an accuracy easily capable of maintaining eccentricity below 0.100-inch. A mill operating the first complete installation of this design is producing couplings, eccentricity of the majority of which is less than 0.060-inch. This eccentricity is the average divergence from round of two points on a pipe section joining the coupling, one point being 18 inches from the end of the coupling and the other at a lesser distance from the coupling.



A 20-inch cold strip mill in the Pittsburgh district has been equipped with a reel drive which affords a 7000-pound tension. As the coil builds up on the take-up block the reel slows down. This is accomplished by a vibrating relay which controls the field strength of the reel motor. The relay is responsive to the motor armature current which, in turn, is proportional to the tension on the strip. The range of mill speed can be adjusted without affecting the tension.

♦ ♦ ♦

At a plant in the Pittsburgh district where terne plate furnaces are fired with a luminous gas flame which envelops the kettle, the terne bath is brought to working temperature in 12 hours compared with 36 hours formerly required to melt down when the furnace was fired with coal. Approximately 700 cubic feet of gas is required per ton of material coated by the use of the luminous type of combustion.



ON a 125-ton open hearth furnace in Southern Ohio equipped with a recently developed mechanical ejector a 10 per cent saving in fuel has been effected. The draft device includes a venturi placed near the top and on the inside of the stack and a motor-driven fan installed at the base for creating an air supply. Practically no change was noticed in the output of steel in tons per hour.

♦ ♦ ♦

With sufficient manganiferous ore in the burden to make a 2 per cent manganese iron, a stack in West Virginia is being operated on a high acid slag and high blast temperature. The lean slag keeps the bosh and hearth clean and affords uniform travel of the stock through the furnace, thus promoting low flue dust output, low coke consumption and maximum production.

♦ ♦ ♦

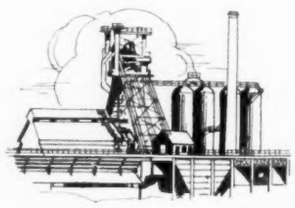
Steel sheets have been processed in many different ways including spinning, drawing, pressing, dishing, drawing, expanding, stamping, etc., but only recently has a new method of fabricating this product come to light. A pair of flat sheets cut to the right shape are placed back to back and welded airtight around the rim and then spot welded down the center for strength before being deformed in any way. This metal bag then is placed in a jig and inflated with compressed air at 90 pounds per square inch pressure to produce a light, rugged section for electrical transformer radiators.

♦ ♦ ♦

A recent forward step is the installation of seven rolling mill screwdowns of the variable-voltage type. Adjustment of the roll is fast, large sluggish contactors are eliminated, electrical maintenance is reduced and a saving in power afforded.

♦ ♦ ♦

A considerable saving in lubricating costs has been effected on a 10-inch merchant mill in the Chicago district. The installation serves a 600-foot runout table and the cooling bed table. The system takes an entire barrel of lubricant and operates on 90 pounds air pressure.



ABOUT 600 pounds of basic open-hearth slag per ton of iron is being used at a stack in this country to increase the percentage of manganese in the metal. A ton of this grade of slag is equivalent to ½-ton of ore containing about 51 per cent iron and ½-ton of limestone, according to operating practice.

♦ ♦ ♦

Casting heavy octagon forging ingots toward the outside of the mold is giving better results at one plant than center pouring. The mold is revolved slowly while the steel is being poured. By this method the sonims are forced to the center and come to rest in the sinkhead, thus obviating deep surface defects as a result of the forging operation.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Merchant-Bar Mills

Recent developments in merchant-bar mills, by G. L. Fisk, a paper presented at the annual meeting of the American Society of Mechanical Engineers, in New York, Nov. 30-Dec. 3, 11 pp., 17 illusts.

After first discussing trade demands on merchant-mill products, the author points out the value of research and records in the making and rolling of steel. He then proceeds to discuss the factors affecting the quality of product in the merchant mill, and the items to be considered when selecting the type of merchant mill for a given range of products in a given plant. The use and arrangement of vertical mills is described, as well as the application of roller bearings to mill rolls, in the case of existing and new mills. Economic and practical considerations involved also are analyzed.

Particulars of a new transfer table design are cited along with uses and advantages of electric driven flying shears. Other subjects include cooling bed requirements to meet the needs of various merchant-mill products, cooling bed design and operation, objections to the double cooling bed, and double cold shearing from a single bed.

—STEEL, 12-14-31

Handling Drawings

A method of handling shop drawings, by H. G. Beebe of the Falk. Corp., in Factory and Industrial Management, November, 1931, p. 638, 2 pp., 3 illusts.

Lack of proper facilities for the storage and distribution of blueprints in the shop can give rise to no end of grief. Design of a blueprint crib is described, which achieves the following desiderata: Storage of all blueprints near the center of the shop; a suitable index for an unlimited number of blueprints, showing their location in the crib and also in the shop when in use at any machine or bench; and replacement of illegible blueprints by new ones as soon as they are unfit for use and not when they are required subsequently by a workman.

Centrally located in the shop was placed a steel-framed glass and sheet metal enclosure measuring 8 x 32 feet, with two serving windows, one on either end. In this enclosure cabinets were installed with shelves and vertical partitions spaced to form compartments for four standard blueprint sizes. The vertical partitions were made demountable so that the number of any size compartment could be increased or decreased to suit the needs of the moment.

The crib is in charge of an attendant who issues prints to workmen as they require them, each workman being required to fill out a special form and leave it with his tool check at the crib when he removes a blueprint. An index lists over 40,000 prints carried in the crib. The attendant is responsible for keeping all prints in good condition.

—STEEL, 12-14-31

Electric Annealing

Strip and sheet annealing in the electric furnace with atmosphere control, by Wirt S. Scott, first of two instalments, in Iron Age, Dec. 3, 1931, p. 1422, 4½ pp. 7 illusts.

For bright annealing of iron and steel strips and sheets, the electric furnace with artificial atmosphere control has made it possible to accomplish astounding economies, ranging from $1.50 to $3.50 per ton, depending upon local conditions and the application. Elimination of rejects and improvement of quality of heat treated product are other advantages.

Excess of hydrocarbons or small quantities of moisture in the atmosphere control gas will cause tarnishing of the work. Other problems confront efforts to perfect bright annealing treatments, but present research has overcome many of these difficulties, special gases having been developed to prevent oxidation of the work while being heated.

—STEEL, 12-14-31

Bearing Troubles

Methods for preventing antifriction bearing troubles, by Elmer Zitzewitz, in Blast Furnace and Steel Plant, November, 1931, p. 1471, 2 pp., no illustrations.

Many antifriction bearings are doomed to trouble and short life long before they are installed because they have not been protected properly against corrosion, grit and dirt while in stock. Every bearing not in use and before installation should be covered carefully with a grease or oil that is inhibitive and nonhygroscopic, and then should be wrapped so as to be protected against the atmosphere.

Most operating difficulties can be overcome by attention to five basic principles: Choose the proper size of bearing; choose the proper type of bearing; mount it properly; lubricate it properly; and maintain it properly. Regarding lubrication, oil is preferable for high speeds and grease for low speeds. Whether the dividing line happens to be 1500 or 2000 revolutions per minute will depend upon the method of lubrication employed, temperatures involved, absence or presence of dirt and similar operating conditions.

—STEEL, 12-14-31

Broaches

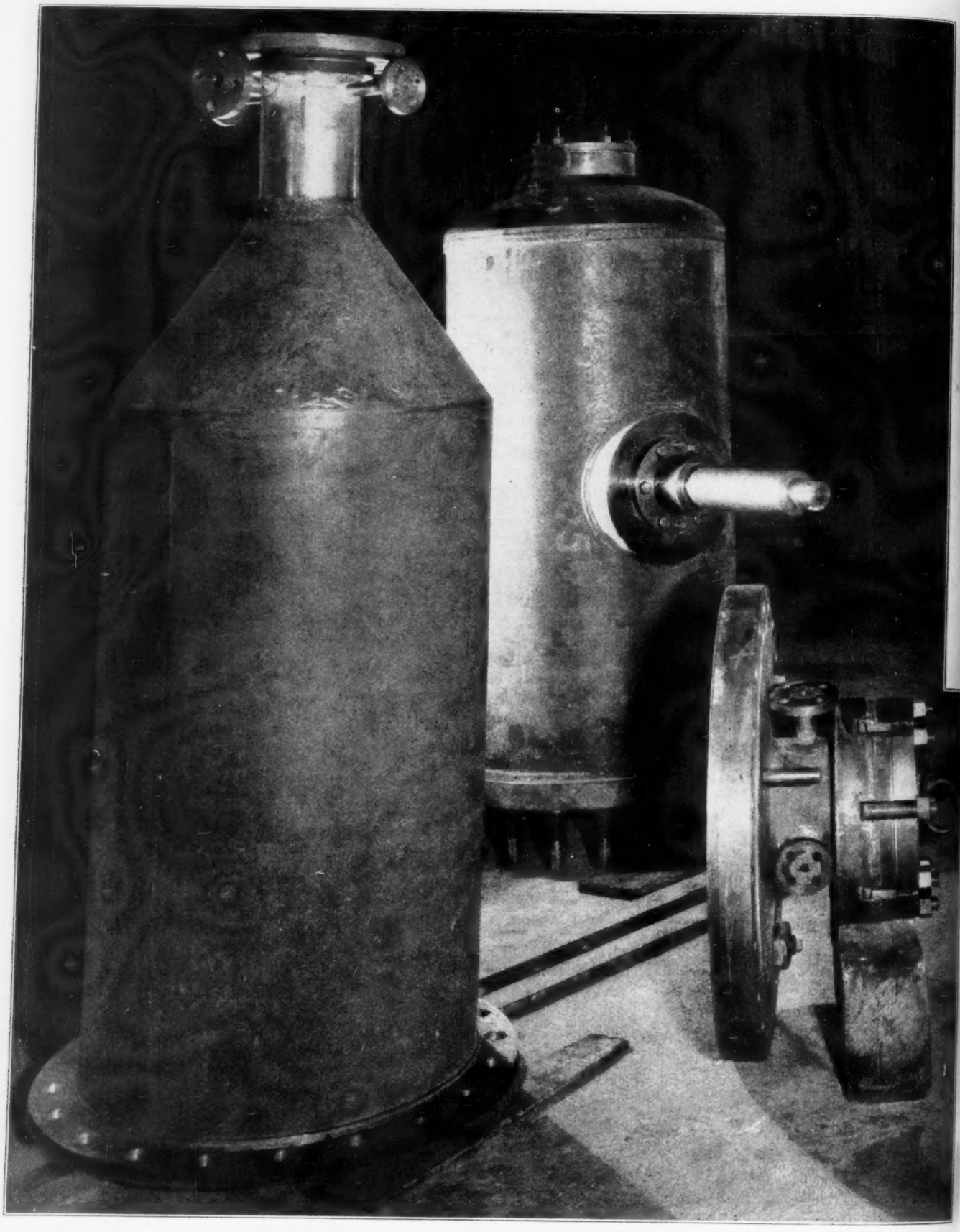
Importance of broaches in precision machining work, by John E. Wells, in Automotive Industries, Nov. 7, 1931, p. 728, 4 pp., 9 illusts.

During the past few years, great strides have been made in the use of various types of broaches for finishing of parts to close tolerances on high production basis. Until recently it was thought that broaches could be used successfully only for internal work. Internal broaches, which can be of either push or pull type, have been developed to a point where high finish and extremely close tolerances are possible under production conditions.

Broaching machine manufacturers have developed successful units of both vertical and horizontal types in various capacities up to 75 tons. A parallel development also has been made in heat treating equipment necessary for the manufacture of broaches.

Broaches of internal type now are being used on single and multiple keyways and splines; rectangular, square, hexagonal, T-shaped and various other shaped holes. Production requirements are increasing daily with the result that more manufacturers constantly are turning attention to other types of broaching, such as surface and external.

—STEEL, 12-14-31



SMITH WELDED

Alloy Metal Lined

JACKETED

TUMBLING

DIGESTER

SMITHWelded

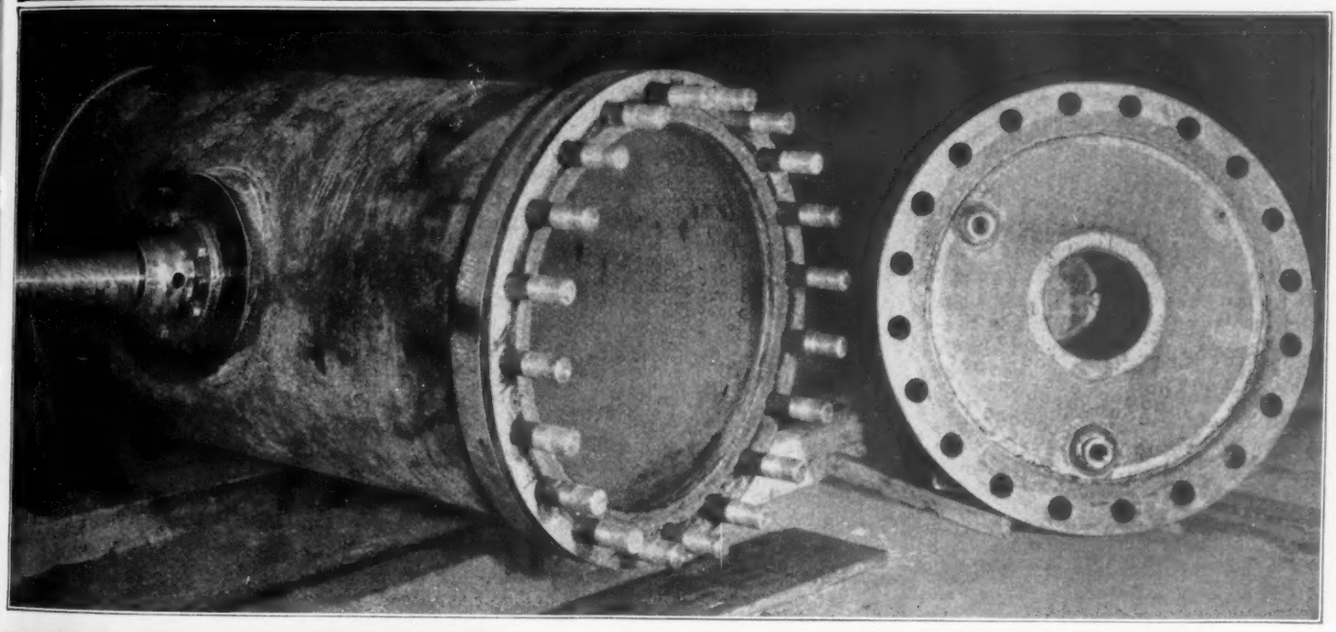
This little Digester, about 6 feet long, is one of several developed and built by this Company for the leading paper pulp laboratories.

Its construction is unique as compared with the brick lined digester in that it can be tumbled and externally heated. These novel features are made possible by SMITH*Lining* with alloy metal.

The metallic lining offers possibilities of utilizing the *same* digester for *different* processes, and can be duplicated in large commercial size vessels.

A. O. SMITH CORPORATION

General Offices: Milwaukee, Wisconsin · PRESSURE VESSEL DIVISION



The SMITH*Lined*-SMITH*Welded Vessel shown at extreme left fits into the vessel next to it, forming the Jacketed Tumbling Digester shown on this page.*

SMITHLINED

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Adds Gear Reduction Unit To Standard Series

Cleveland Worm & Gear Co., 3258 East Eightieth street, Cleveland, recently announced an addition to its series of standard worm gear reduction units, designed to transmit

Worm gear reduction unit designed by Cleveland Worm & Gear Co.

up to about 7½ horsepower, the capacity depending on the reduction ratio and worm speed. The new size of unit is furnished in both horizontal and vertical types and is designated size 70. Horizontal units are built with the worm below or above the gear while in the vertical type the gear shaft may extend upward or downward. The accompanying illustration shows the horizontal type.

All shafts of the size 70 are mounted in antifriction bearings, the gear shaft mounting of the vertical type being such that the unit will withstand an external axial thrust downward of 2000 pounds. The worm and its shaft are made from a single nickel alloy steel forging, carburized, heat treated, hardened and ground all over to a high degree of accuracy. The gear is hobbed from a solid chill-cast, nickel bronze blank. Worm thread is of the automotive type with high pressure angle.

The housing of the reduction unit is exceptionally sturdy with heavy walls, internal ribs and bolt flanges. All bolt holes are spot-faced and the clamping plates are all finished under the bolt heads. Oil seals are fitted on each shaft extension. Standard keys are furnished with each reducer. In a range of nine standard ratios, varying from 4-5/16:1 to 60:1, the size 70 unit can be shipped from stock. Fifteen special ratios also are available.

◆

Novel Design Features New Type Press Brake

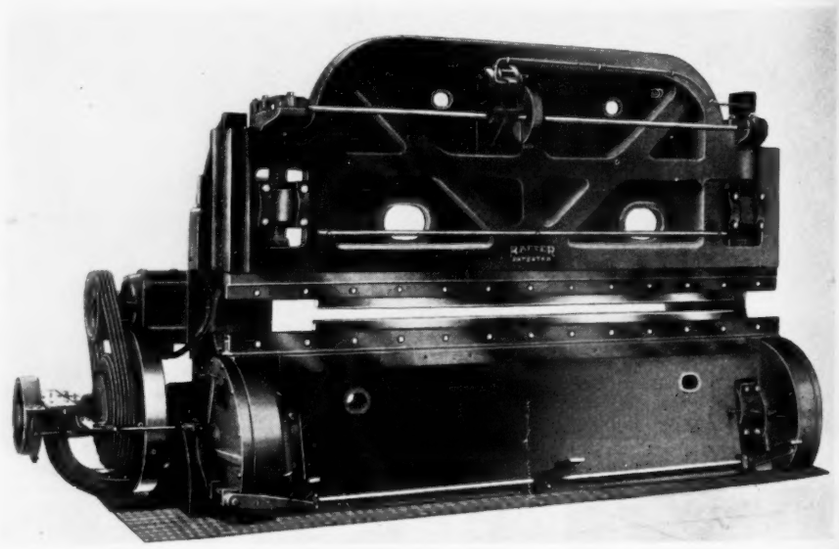
Farrel-Birmingham Co. Inc., Ansonia, Conn., is offering to sheet metal workers a new type of press brake and quick-release die holder for which it recently acquired the rights to manufacture under Rafter patents. All of the drive is attached to or contained within the base; overall height thus being shortened. Motion is transmitted to the ram by two special C-shaped connecting rods actuated by eccentrics located in the base. Eccentric shafts are separate and are supported by three large bearings, one bearing on each side of the eccentric and one outside the driving gear. The application of power from below pulls ram into work.

The ram adjusting screws are hung in the ram, the lower end of the screw fitting into a recess in the ram, which provides a guide for the screw and prevents side motion. There are two major members of the brake, the base and the ram. The latter is deeper, not only in the center but on the ends, a constructional feature which adds to the stiffness of the ram, permitting use of longer guides.

As shown in the accompanying illustration the press brake is a true open-throat machine constructed of heavy rolled steel plates fabricated by welding. It is driven by a motor through a multiple V-belt to the flywheel. The drive shaft and flywheel are equipped with roller bearings and lubrication is provided by a modern lubricating system. The friction clutch is electrically controlled by push buttons operated by hand or foot.

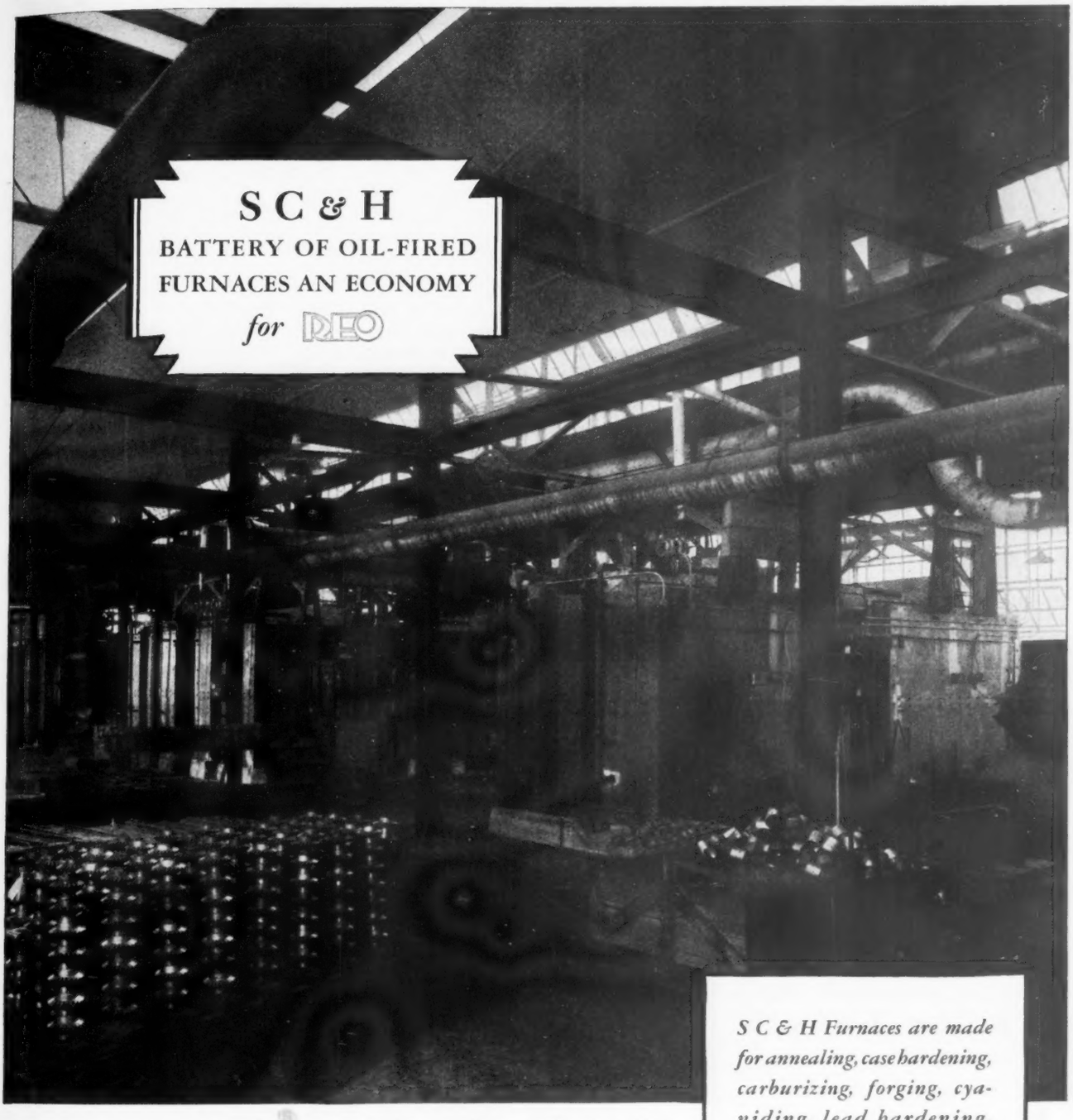
Die Holder Releases Quickly

The quick-release die holder is an outstanding feature and eliminates trouble, delay and expense should the brake become jammed from overloading or other causes. Simply loosening a few bolts separates the two clamping members holding the die. This permits the die to drop,



Press brake incorporating a quick-release die holder is being manufactured by Farrel-Birmingham Co. Inc. under Rafter patents

REO MOTOR CAR COMPANY USES S C & H INDUSTRIAL FURNACES



EXACTING care in manufacturing processes has always been the rule with the Reo Motor Car Company. When *Strong, Carlisle & Hammond* Engineers six years ago designed, built and installed the twelve big truck-loading type carburizing furnaces shown above in the Reo heat treating department, all carburized and heat treated parts were inspected 100% for hardness, then as now. And Reo exercises as much care in buying as in manufacturing.

Used continuously for carburizing at 1700° F., a new floor and tile is required but once a year. These furnaces are also used for annealing and drawing of live shafts, spindles, spring clips and drawing of sheet metal stock at temperatures ranging from 1050° to 1700° F. During six years of service, there has been no interruption of service except the usual week-end shutdown. Say Reo engineers, "The efficiency of these furnaces is remarkable."

Meeting requirements of leaders in the motor industry for many years, S C & H Engineers are well equipped by experience to solve the heat treating problems of any industrial plant. Ask for a copy of the Reo SC&H furnace installation report. It will interest you. The Strong, Carlisle & Hammond Co., 1382 W. Third St., Cleveland, O.

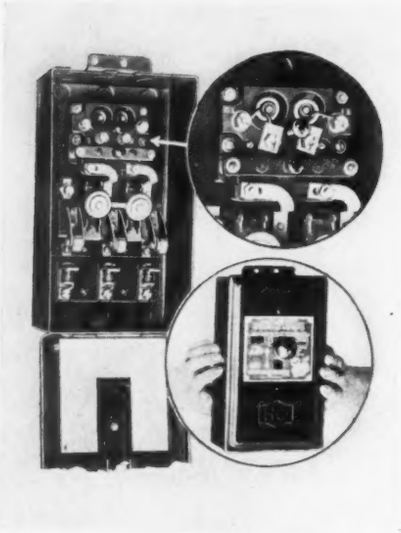
S C & H Furnaces are made for annealing, case hardening, carburizing, forging, cyaniding, lead hardening, nitriding and oil tempering. They are built in all sizes of Oven, Pot, Continuous, and Special Types for Electric, Oil or Gas application.

DISTRICT OFFICES:

136 FEDERAL STREET - - - BOSTON, MASS.
2832 EAST GRAND BLVD. - - DETROIT, MICH.
11 S. DESPLAINES STREET - - CHICAGO, ILL.
335 FIFTH AVE. - - - PITTSBURGH, PA.
30 CHURCH STREET - - - NEW YORK, N.Y.

STRONG, CARLISLE & HAMMOND

MANUFACTURERS OF ELECTRIC, OIL AND GAS INDUSTRIAL FURNACES



Overload starting switch redesigned by Cutler-Hammer Inc.

facilitating the removal of the work without damage to it, to the die or to the machine.

◆

Unique Joint Construction Marks New Chain

Morse Chain Co., Ithaca, N. Y., has developed a roller chain which has a distinctly different joint construction. Within the rollers there are two joint members, a segmental bushing and a pin. The cross section of the pin is that of a round pin integral with a segmental bushing. On account of this construction, when a chain is flexing on or off a sprocket, all sliding movement of surfaces under load occurs between the roller and joint members. This feature insures uniformity of pitch throughout the life of the chain, and, therefore, smoother and quieter operation.

The open spaces between the joint members of the chain, shown in the accompanying illustration, provide reservoirs for oil and lubrication and are made more effective by the "pumping" action when flexing. The chain is made to manufacturers' standards and is interchangeable on all standard roller sprockets.

◆

New Starters Incorporate Overload Relays

Cutler-Hammer Inc., Milwaukee, has redesigned its three and four-pole type, across-the-line starters to incorporate thermal overload relays in place of the thermal overload cutouts formerly supplied. The new bulletin starter shown herewith, also has a redesigned cover interlock which prevents opening the enclosing case when the motor is running, and allows padlocking the operating lever and the enclosing case in the "off" position.

The overload relay provides many features which are not obtainable with the thermal cutout. Should an overload occur which may be dangerous to the motor, the overload relay trips, opening two lines to the motor so that the entire circuit is opened—the motor cannot continue to run on single phase. When tripped, there is nothing to renew—simply returning the operating handle to full "off" position resets the overload relay and the motor can then be restarted. This eliminates time taken to renew the fusible clips of the old cutout. A trip indicator in the cover of the enclosing case shows whether the overload relay has been tripped.

New type roller chain designed by Morse Chain Co.

◆

Suction Crane Devised for Many Applications

United Engineering & Foundry Co., Pittsburgh, has developed a suction crane for steel, nonferrous and flat materials where the surface must be preserved and breaks or buckles are to be avoided, or where a magnet crane is inconvenient or unsuitable.

Possible uses for the suction crane are almost unlimited. It is held by the manufacturer to be ideal for thin sheets, high-finish sheets, tin plate, chromium plated sheets, buffed copper sheets and polished stainless strips. It also is applicable to paper, cardboard, fiber, wallboard, glass and lumber.

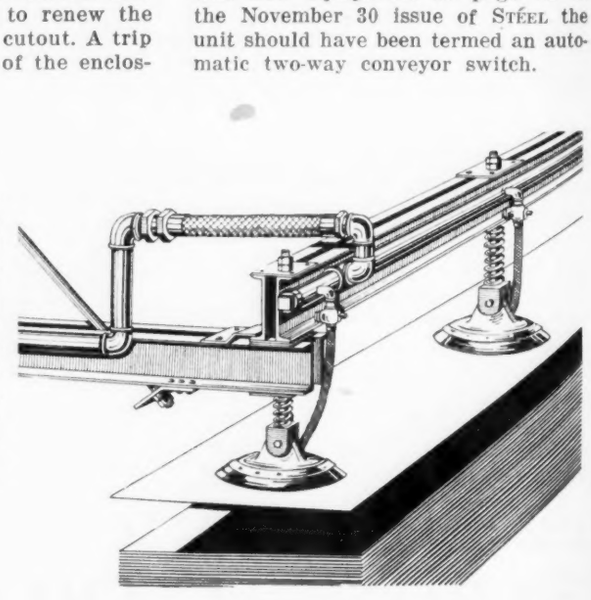
The crane is a self-contained unit consisting of a series of suction cups mounted in a bracket suspended from a boom or bridge or other crane construction as shown in the illustration herewith. Vacuum is provided by a small motor-driven pump with air lines to the suction cups. The pump runs continuously and the vacuum is controlled by a two-way valve which either applies the vacuum or lets air in for release.

◆

Automatic Two-Way Switch Conveys Hot Sheets

Mathews Conveyer Co., Ellwood City, Pa., recently developed a new conveyor switch to handle hot sheet packs from both sides of a continuous furnace. In the description of this new equipment on page 42 of the November 30 issue of STEEL the unit should have been termed an automatic two-way conveyor switch.

SUCTION crane for lifting steel, nonferrous and flat materials employs vacuum cups, the size and number of which determine the lifting power of the unit. A two-way valve controls the vacuum which is created by a small motor-driven pump running continuously. United Engineering & Foundry Co. developed the device



Steel Buyers Deferring Commitments

Year-end Hesitancy Making It Difficult To Close Automobile, Structural and Pipe Programs—Prices Sagging—Operations Down One Point

PRODUCERS of steel are figuring on specific requirements which, considering the season and general business conditions, bulk moderately encouraging, but they find it increasingly difficult to close, especially in the automotive, building and steel pipe industries.

Apprehension over the financial situation is lifting, even though some projects languish for lack of financing, but with prices more unsettled, year-end inertia creeping on and consuming demand so restricted that delay incurs no penalty, buyers tend to defer commitments until a sizeup of the new year is possible.

This spirit of manana carried steelmaking operations last week to a new low for the depression, to an average of 25-26 per cent for the industry. There was no change in the rate of 28 per cent at Pittsburgh, 24 at Chicago, 27 at Buffalo, 30 at Birmingham, but Youngstown mills eased off 4 points to 28 per cent, Cleveland 2 to 35, eastern Pennsylvania ½ to 23½ per cent.

Indications are that the steel rate will come close to breaking through 25 per cent this week. A scheduled gain of 8 points at Buffalo, due to alternate week production at some steelworks, will probably fail to wash out slight declines at Pittsburgh and Chicago. Tin plate mills, which have been a mainstay of production, are curtailing unexpectedly and rapidly.

In the price structure as a whole the same tendency to sag is manifest. Pressure upon sheet and strip prices by the automotive industry has been effective. Further shading of bolts and nuts is reported. Pig iron is off $1 a ton at Cleveland and 50 cents at Chicago. Coke has been shaded 50 cents at Chicago, and the valley pig iron structure is weaker. Ferroalloys have been reduced as much as $10 a ton for 1932 delivery, while South African manganese ore is lower.

For the key to the first quarter price situation, the steel trade is looking to a nearby announcement on the plate, shape and bar base at Pittsburgh. Nominally 1.60c, concessions which normally acrue to tonnage buyers have been sought by small consumers. It is possible that producers may reaffirm the 1.60c level and attempt to hold it for the first quarter.

In vain has the trade banked upon a substantial tonnage from Ford for December and first quarter steel requirements. Indications are that Ford, like practically all automobile manufacturers save Buick and Chevrolet, will assemble a minimum number of new models for dealer and show purposes, and in all probability the Ford tonnage will be distributed among so many makers that none will benefit appreciably. At least six moderate-size steel requirements for Detroit interests have been figured by the mills, with no action yet.

Also a victim of delay is the 10,000 tons of 20-inch pipe for the Continental Construction Corp. gas distribution line in Illinois. Buffalo, about to embark upon a $2,200,000 water line program, is under pressure to substitute steel for cast iron pipe and assist home industry.

Structural steel awards for the week, 18,275 tons, including 7400 tons of sheet piling for New York river piers, placed with Bethlehem Steel Co., were approximately the same as in the preceding week. The tendency is to defer important jobs until after Jan. 1. In the Chicago district 50,000 tons will then become active. October awards in the New York metropolitan district, according to the Structural Steel Board of Trade, were the lowest in history.

Due to pig iron price reductions, STEEL'S single-price index representing iron and steel products is down 11 cents to $30.36, while the finished steel composite holds at $47.82, and the scrap composite at $8.19.

Composite Market Averages

	Dec. 12	Dec. 5	One Month Ago (Nov., 1931)	Three Months Ago (Sept., 1931)	One Year Ago (Dec., 1930)	Ten Years Ago (Dec., 1921)
Iron and Steel Composite	$30.36	$30.47	$30.61	$31.03	$31.74	$33.99
Finished Steel Composite	47.82	47.82	48.17	48.72	49.30	51.30
Steelworks Scrap Composite	8.19	8.19	8.22	8.82	10.77	11.44

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite:**—Plates, shapes, bars, hot strip, nails, tin plate, pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Dec. 12, 1931	Nov. 1931	Sept. 1931	Dec. 1930
PIG IRON				
Bessemer, del. Pittsburgh	$17.76	17.76	18.26	18.76
Basic, valley	15.00	15.00	17.00	17.00
Basic, eastern del. eastern Pa.	16.00	16.00	16.65	17.50
No. 2 foundry, del. Pittsburgh	17.76	17.76	18.26	18.26
No. 2 foundry, Chicago	16.50	17.00	17.50	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.00	18.00	18.15	18.25
**No. 2X, Eastern del., Phila.	15.76	16.01	17.26	18.26
Malleable, valley	16.00	16.50	17.00	17.50
Malleable, Chicago	16.50	17.00	17.50	17.50
Lake Superior, charcoal, del. Chi.	20.04	25.04	25.54	27.04
Gray forge, del. Pittsburgh	17.13	17.13	17.63	17.63
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	93.29

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.35	2.35	2.40	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.00	29.00	30.50
Sheet bars, open-hearth, Pitts.	29.00	29.00	29.00	30.50
Billets, open-hearth, Pittsburgh	29.00	29.00	29.00	30.50
Wire rods, Pittsburgh	35.00	35.00	35.00	35.50

	Dec. 12, 1931	Nov. 1931	Sept. 1931	Dec. 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.60	1.70	1.70	1.70
Steel bars, Philadelphia	1.89	1.89	1.89	1.89
Iron bars, Chicago	1.60	1.65	1.70	1.70
Shapes, Pittsburgh	1.50	1.60	1.60	1.60
Shapes, Philadelphia	1.69½	1.69½	1.76	1.76
Shapes, Chicago	1.60	1.70	1.70	1.70
Tank plates, Pittsburgh	1.50	1.60	1.60	1.60
Tank plates, Philadelphia	1.73½	1.73½	1.80½	1.80½
Tank plates, Chicago	1.60	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	1.90
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.40	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.90	2.90	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.55	2.55	2.50
Sheets, No. 24 galvan., Chi.	3.05	3.05	3.05	3.15
Plain wire, Pittsburgh	2.20	2.20	2.20	2.25
Wire nails, Pittsburgh	1.90	1.90	1.90	1.90
Tin plate, per base box, Pitts.	4.75	4.75	5.00	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.80	12.75
Heavy melting steel, eastern Pa.	7.87½	7.95	8.75	11.00
Heavy melting steel, Chicago	7.50	7.65	7.95	10.00
No. 1 wrought, eastern Pa.	9.50	9.50	9.75	13.50
No. 1 wrought, Chicago	7.25	8.00	8.00	10.00
Rails for rolling, Chicago	10.00	10.00	10.50	13.00

Sheets

January Orders Appearing, but Automotive Business Still Lacks Volume—Autobody Easier

SHEET PRICES, PAGE 49

Pittsburgh — Sheet specifications are spotty, while total business lacks improvement. Orders for January shipments are beginning to appear, though consumers are restricting shipments as much as possible over the remainder of December. Automotive demand is unchanged. Ford orders still are limited to small lots. No action has been taken on first quarter inquiries issued by several automotive companies a few weeks ago. Price announcements for first quarter are lacking, and intimations of advances are absent. An easier price situation has developed on some grades although the common finishes are steady. Hot-rolled annealed sheets continue 2.40c; blue annealed, 1.85c; and galvanized, 2.90c. Autobody, however, is weaker, now being 3.00c to 3.10c, while No. 10 hot-rolled are 1.65c to 1.70c. Heavy cold-rolled sheets reflect pressure of automotive buying. Mill operations are slightly higher.

New York—Although indications point to the reaffirming of present quotations on sheets for first quarter, few sellers have taken a definite position. Consumers show little interest.

Philadelphia—An eastern mill has reaffirmed sheet prices for first quarter, quoting 1.85c, base, Pittsburgh, on No. 10 blue annealed; 2.40c for No. 24 hot-rolled and 2.90c for galvanized. Business is quiet.

Cleveland—Shipments of practically all grades of sheets have been slowing so far in December, due largely to inventories. Accompanying a slight increase in the volume of sheet tonnage pending has come a wide disparity in prices. Both autobody and light cold-rolled grades are being shaded on purchases for the automotive industry, the 3.10c Pittsburgh base on autobody being only representative of small lots. Hot-rolled stock at 2.40c has been under some pressure, and it is rumored the price has been cut as low as 2.25c. The Fisher Body Co. here may be expected to make a purchase this week through Detroit. The local barrel trade is inactive.

Cincinnati—Demand from automotive sources, chiefly in small lots, has led to a slight improvement in mill schedules. The formal quotations on autobody sheets remains 3.10c.

Youngstown, O.—The livest feature of steel sheet demand continues to be that by makers of stamped and enameled wares for domestic use. While Buick, Chevrolet, and Willys-Overland have still a number of cars to build before all their dealers will be supplied with samples of the new models, other important makers have continued to place a minimum of specifications for sheets with the mills. Indeed, it is now believed that Ford is not likely to come forward with his steel business until late this month; which means his new model may not appear until early in February. Common black sheets continue in fair demand, while it is reported some slight readjustment has been made in the price of iron sheets for enameling purposes, other sheet prices appear unchanged.

Chicago — Occasional interest is shown in first quarter sheet requirements, but only a small amount of business has been booked. Specifications are about equal to the November rate, and operations in the Chicago area are 20 to 25 per cent. Some sales of No. 24 galvanized have been closed at 3.00c, Gary and Indiana Harbor. Sheet distribution by jobbers has been declining, due in part to the disappearance of many of the smaller sheet metal shops producing conductor pipe and roofing products.

St. Louis—Seasonal recession in demand from the general manufacturing trade is slightly more pronounced than usual. Automotive specifications are increasing slowly. Prices are unchanged.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh, base	1.65c to 1.70c
Gary, Ind. Harbor, base	1.75c to 1.80c
Chicago, del.	1.80c to 1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.20½c
Birmingham	2.00c
San Francisco, c.i.f.	2.33c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del.	2.75½c
San Francisco, c.i.f.	2.88c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25½c
San Francisco, c.i.f.	3.38c

AUTOMOBILE No. 20

Pittsburgh, base	3.00c to 3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.65c
Gary base	2.75c
St. Louis, del.	3.00½c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c
St. Louis, del.	2.70½c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c
St. Louis, del.	3.30½c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$4.75
Gary, Ind., base 10 cents higher.	
Long ternes, 24, unassorted, lb.	3.15c

Wire Products

For First Quarter

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
Philadelphia, del.	1.73½c to 1.78½c
New York, delivered	1.83c to 1.88c
Boston, delivered	1.95c
Chicago, base	1.60c to 1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, base	1.75c
Coatesville, Pa., base	1.65c to 1.70c
Pacific Coast, c.i.f.	1.85c to 1.95c
St. Louis, del.	1.95½c

Structural Shapes

Pittsburgh, base	1.50c to 1.60c
Philadelphia, del.	1.69½c
New York, del.	1.75¼c to 1.80¼c
Boston, del.	1.88½c to 1.93½c
Chicago, base	1.60c to 1.70c
Cleveland, delivered	1.68½c to 1.78½c
Lackawanna, N. Y. base	1.60c to 1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.60c to 1.70c
Birmingham, base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.05c
Cleveland, base, local del.	1.65c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.89c
New York, del.	1.93c
Boston, del.	2.00c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.65c
New York, delivered	1.88c to 1.98c
Philadelphia, delivered	1.84c to 1.94c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.50c to 1.60c
Chi., rail steel	1.55c to 1.70c
Chi., rail steel, bridge and culvert	1.40c to 1.50c
Philadelphia, cut lengths	2.04c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.00c to 2.10c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c. mill

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo.	1.25-1.75 Ni.	1.05
2000	0.25	5100	.80 - 1.10	
2100	0.55	Cr.		0.45
2300	1.50	51:00 Cr.		
2500	2.25	spring		0.20
3100	0.55	6100 bars		1.20
3200	1.35	6100 Spring		0.95
3300	3.80	Cr., Ni., Van.		1.50
3400	3.20	Carbon Van.		0.95
4100 .15 to .25 Mo.	0.50	9250 (flats)		0.25
		9250 (rds.,sq.)		0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.60c
Do, 6 1/16 to 24-in., Pitts.	1.50c
Hot strip, bands 6 in. and under, Chicago	1.70c
Do, 6 1/16 to 24 in.	1.60c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do., Chicago	1.85c to 1.95c
Cold rolled strip, Pitts., Cleveland	2.05c
Worcester, 3 tons, over	2.30c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam	3.80c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread.....73, 10 and 10 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list .....73, 10 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts .....73, 10 and 10 off
Tire bolts ..... 60, 10 and 10 off
Stove bolts, 80-25-10 off in pkgs.; 80-25-10-2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished .....73, 10 and 10 off

HEXAGON CAP SCREWS

Milled .....80-10-10-5 off
Upset 1 in. diam. and smaller....85-10 off

SQUARE HEAD SET SCREWS

Milled .....80-5 off
Upset 1 in. and smaller.....80-10-5 off
Upset, larger than 1 in.....80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c
Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.
Chain, BB, BBB, 9/16-1½ in....33 1/3 off
Sheet piling, Pitts. 1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Bars

Price Definition for First Quarter Still Lacking—Miscellaneous Demand Fairly Steady

BAR PRICES, PAGE 49

Chicago—Automotive partsmakers are active customers, but mills are awaiting allocation of the Ford tonnage to stimulate specifications. Specifications again have gained, one producer noting its shipping orders for the past week were the best in about 60 days. Despite the recent downward adjustment in bar, shape and plate prices to a minimum of 1.60c, mill, miscellaneous buyers still order on a month-to-month basis. The short-range contracts have increased slightly since the price change, and are the best in 30 days. Makers of excavating and snow plow equipment are among the leading buyers of bars and light shapes. Bar mills are at about 30 per cent, leading other heavy finished departments.

New York—Commercial steel bars are 1.60c, Pittsburgh, on light trading. The outlook on first quarter prices is uncertain, with the possibility that announcements may not be made by producers until near the close of this month. Common iron bars are 1.60c to 1.70c, Pittsburgh, with the lower figure the more representative.

Philadelphia—Steel bars continue 1.60c, base, Pittsburgh, pending announcement of the first quarter price. The market is quiet.

Pittsburgh—Bar demand is fairly steady, though anticipated improvement in automotive business has failed to develop. Producers still defer price announcement for first quarter and inquiry for that period is light. The market has been fairly well maintained at 1.60c, Pittsburgh, with business insufficient to test the market.

Youngstown, O.—New business in steel bars continues of a routine character, district bar mill operations being unchanged for several weeks. Some additional specifications for alloy steel bars have been received from automobile partsmakers. Common steel bars hold at 1.60c, Pittsburgh.

Cleveland—Announcement is withheld on the merchant steel bar base for both locally and outside delivered stock for first quarter, though the trade's expectations concur that the 1.65c Cleveland figure will be extended.

Birmingham, Ala.—Production is being held down, as demand shows no improvement. Expectations are for renewed business shortly.

Tin Plate Demand and Operations Holding Up

Tin Plate Prices, Page 49

Pittsburgh—Tin plate specifications are slightly heavier and production is well maintained at the recent 48 per cent rate. A portion of incoming business is for first quarter shipment, but steady operations are in prospect for the remainder of this month. First half contracting is nearly complete with the market continuing $4.75 per base box.

Youngstown, O.—Acting upon intimations from canmakers of slower demand for their product, ranging from 20 to 25 per cent in volume, due to the extraordinarily heavy pack of fruits and vegetables in the past season with prospects of a large carry-over from winter, tin plate mills now are operating conservatively on tin plate for delivery next spring. It is believed the Warren, O., independent works may be idle longer than the announced ten-day period for blooming mill repairs.

Cold-Finished Bar Price Expected to Continue

Cold Finished Prices, Page 49

Pittsburgh — Continued quietness in automotive orders holds shipments of cold-finished steel bars at its recent quiet rate. Shipments this month are expected to decline below the November volume unless automotive business improves shortly. A few first-quarter inquiries are being received and producers are expected to open books shortly. Reaffirmation of the 2.10c price is anticipated.

Cleveland—Orders for material for completing the recent 774-truck order of White Co. have not all been filled, including some of the cold-finished steel. Cold-finished steel bars are not heard below 2.00c in this immediate district with the official level still 2.10c, Cleveland.

Plates

Western Tank Requirements Are Heavier—Some Barge Inquiries Scheduled Soon

PLATE PRICES, PAGE 49

Chicago—East Texas and Pacific coast refineries are inquiring for 2000 tons of storage tank plates, and 1000 tons have been booked by a local tankmaker for export. Oil country orders total 1500 tons in miscellaneous lots. Plate prices are nominal at 1.60c to 1.70c, Chicago. Plate operations are 20-28 per cent.

Boston—Sales are small at 1.65c to 1.70c, eastern mill. On readvertised bids for a tank at Melville, R. I., bureau of yards and docks, Chicago Bridge & Iron Works is low at $3680. Several oil storage projects, including two at Quincy, require good plate tonnages, general contracts having been placed. Some delay, however, is expected.

New York—On the small spot business that is being placed plates continue 1.65c to 1.70c, Coatesville, Pa.

Philadelphia—Pending the opening of books for first quarter, plate sellers continue to quote 1.65c to 1.70c, Coatesville, Pa., in car lots. The Sun Shipbuilding Co., Chester Pa., is negotiating for several thousand tons for vessels placed recently; and the Pennsylvania railroad for several hundred tons for Wilmington, Del., and Washington electrification work.

Pittsburgh — Business continues light with the tendency slightly downward. Little improvement is looked for over the remainder of the month. Several barge inquiries are scheduled to be closed shortly. Announcement of the first quarter prices is lacking. The current market is 1.50c to 1.60c, Pittsburgh.

Cleveland—For the small scattered orders plate mills are receiving, 1.60c, base, Pittsburgh base, apparently is applied. An occasional boiler shop order is conspicuous as this trade has been particularly quiet. Some inquiry has been expected by this time for lake freighter tank tops, but the work has not been forthcoming from the lower lake shipbuilding yards. Specifications for the 774 trucks that White Co. will build for New York call for a heavy covered dump body, and will take about 775 tons of plates. The lo-

cal 84-inch mill was scheduled for operation beginning Dec. 14.

Contracts Placed

1650 tons, water tank, Long Beach, Calif., to Western Iron Works, San Francisco.

Contracts Pending

260 tons, signal towers, Wilmington, Del.-Washington, electrification work, Pennsylvania railroad; American Bridge Co., Pittsburgh, low.

150 tons, plates and shapes, tank and trestle, Benton Field, Alameda, Calif.; bids Jan. 4.

100 tons or more, water tank and tower, veterans' home, Biloxi, Miss., Pittsburgh-Des Moines Steel Co., low.

100 tons, shapes and plates, 121-foot diesel patrol boat, New York harbor supervisor; bids Jan. 7.

Unstated tonnage, two 80,000-barrel tanks, for East Texas Refining Co., Longview, Tex., to Chicago Bridge & Iron Works, Chicago.

Iron Ore Stocks at Lake Erie Lowest Since 1904

Iron Ore Prices, Page 60

Cleveland—Iron ore on Lake Erie docks Dec. 1 amounted to 6,048,327 tons, 417,999 tons less than a year ago, and the lowest for Dec. 1 since 1904. The Lake Superior Iron Ore association reports receipts at Lake Erie ports and shipments from them for the season, as follows:

	Receipts	Shipments	Dock balance Dec. 1, 1931
Buffalo	1,258,933	15,540	2,731
Erie	624,947	555,263	133,319
Conneaut	3,621,962	3,489,832	1,938,405
Ashtabula	1,844,961	1,774,319	2,095,648
Fairport	952,391	911,465	443,834
Cleveland	3,453,349	2,435,121	977,157
Lorain	1,813,557	899,822	118,696
Huron	436,901	437,536	321,796
Toledo	749,429	494,370	16,741
Total	14,756,430	11,013,268	6,048,327
Comparative 1 yr. ago	31,779,844	23,135,905	6,466,326

Receipts for the season at other ports follow:

	Tons
Detroit	840,703
Indiana Harbor	1,246,625
Gary	2,450,555
South Chicago (local fces.)	3,302,619
South Chicago (interior fces.)	198,609
Sault Ste. Marie, Ont.	187,139
Hamilton, Ont.	250,457
Total	8,476,707
Comparative 1 year ago	14,337,329

Books Steel Shafting

Pittsburgh—Crucible Steel Co. of America has booked 11,426 pounds of noncorrosive steel shafting for the United States engineer, Pittsburgh, at 28.61c.

Railroads

Ten Lackawanna Locomotives Bought—Will Buy 300 Underframes at Chicago

TRACK MATERIAL PRICES, PAGE 49

New York—Railroad buying is featured by the placing of 10 Lackawanna locomotives with American Locomotive Co., which also booked three locomotives for the International Cement Co. for shipment to South America. The Lackawanna will also do some locomotive repair work at its Scranton, Pa., shops. Reports that the Santa Fe had placed 10 to 12 locomotives with an eastern builder appear unfounded. Car buying is negligible.

New York Central railroad closes bids Dec. 21 on steel wheels, first quarter requirements being included.

Philadelphia—Seaboard Air Line opens bids Dec. 17 for first-quarter requirements of plates, shapes and bars. Norfolk & Western opens bids Dec. 15 for first-quarter pipe and nail needs. The latter road will inquire shortly for plates, shapes and bars also for first quarter. The order for conversion of 20 steel coaches into electric cars for the Reading Co. will be produced at the Harlan plant, Wilmington, Del., of Bethlehem Steel Co.

Chicago—Car building shops are expecting an award shortly of 300 underframes by the Western Fruit Express, bids having been tabulated. Other car equipment inquiry is lacking. Fair specifications for rails on 1931 contracts and optional agreements have just been released. Rail mill operations are at about 25 per cent. Inquiry for 35,000 tons of rails for Chicago, Burlington & Quincy is being deferred because of the recent changes in executive personnel.

Car Orders Placed

Reading Co., conversion of 20 steam passenger coaches to passenger coach trailers to be used in suburban electric service, to Bethlehem Steel Co., Bethlehem, Pa.

Car Orders Pending

Chicago Great Western, repairs to 500 freight cars.

Locomotives Placed

Alaska railroad, one locomotive, to Baldwin Locomotive Works, Eddystone, Pa.

Delaware, Lackawanna & Western, ten fast freight locomotives, to American Locomotive Co., New York. Company plans to build six switching engines in own shops at Scranton, Pa.

International Cement Co., three locomotives, for shipment to South America, to American Locomotive Co., New York.

Locomotives Pending

Chief of engineers, Washington, one 16-ton gasoline locomotive; Southern Iron & Equipment Co., Atlanta, Ga., low, $3500.

Bolt, Nut, Rivet Prices Go Over into New Year

Bolts, Nuts, Rivets Prices, Page 49

Pittsburgh—First quarter prices of bolts, nuts and rivets are to be continued on the basis of recent quotations and new contracts are to be issued shortly. Bolts and nuts generally are 73, 10 and 10 off with large rivets 2.25c and small rivets 70, 10 and 5 off. Specifications continue light and December business is expected to show a seasonal decline from the November volume. Practically all buyers are restricting purchases to immediate needs.

New York—Eastern bolt and nut makers are announcing 73 and two 10's off list for first quarter. Rivets are unchanged. Allen N. Spooner & Son have placed 150 tons of bolts and nuts with Topping Bros. for North River piers.

Chicago — Further weakness is shown in bolts and nuts. Carload business brings out concessions under 73, 10 and 10 off. Rivet prices are relatively steady. Specifications again have dropped off after a mild spurt of small orders recently.

Colorado Fuel Discovers New Iron Ore Deposit

Denver—Officials of the Colorado Fuel & Iron Co. confirm the report that a large body of high-grade iron ore has been discovered by the company's engineers and geologists about a mile and a half northeast of its Sunrise mine, at Sunrise, Wyo. Work is continuing to find the limits and probable tonnage of the ore. It lies between the Sunrise mine, from which approximately 14,000,000 tons of ore has been extracted, and the abandoned Chicago mine.

Structural Shapes

Piers Piling, 7400 Tons, Awarded — Postpone Alma, Wis., Lock, Also Franklin Memorial, Philadelphia— Chicago Inquiry Involves 50,000 Tons, Half Active

STRUCTURAL SHAPE PRICES, PAGE 49

New York—Structural lettings are heavier due to award of more than 7400 tons of piling for piers, 1000 tons for a Brooklyn, N. Y., parochial school and 1200 tons for a stone crushing plant. Outside these jobs, lettings are few and small. Pending work is heavy, bids closing on several city and state jobs this week and last. Shop work has been specified on 1500 tons of transmission towers to connect a power line from Albany to New York. Lackawanna Steel Construction Co. has the contract. This work had been held up by the power commission. Fabricated prices continue mixed and weak.

Awards in this territory touched a new low for November when but 6535 tons were reported placed by the Structural Steel board of trade. In October, 11,572 tons were let and in November, 1930, 25,563 tons. Bridges and engineering projects are not included in these figures.

Boston—Low bid on the public works building, about 1500 tons, was by the F. B. Warren Co., Philadelphia, $1,403,000, with 17 bidding for the work. Structural lettings are light, including a 500-ton apartment at Cambridge, Mass., and state bridge work. New inquiry is also off, limited to several hundred tons, though several fair-sized projects remain to be placed. Prices are mixed with keen competition among fabricating shops.

Philadelphia—Structurals are dull, prices continuing weak. Plain shapes are 1.65c, nearest mill, in carlots. American Bridge Co., Pittsburgh, is low on 390 tons of shapes and 260 tons of plates for signal bridges, Wilmington, Del.-Washington electrification work for the Pennsylvania railroad; over 1000 tons of this work is to follow.

Buffalo—Union labor is opposing the award to Wisconsin Bridge & Iron Co., North Milwaukee, Wis., for the Michigan avenue bridge and is trying to hold the $500,000 job for local steelworks and craftsmen. The city has not taken final action as yet but has indicated it will make the award to the low bidder, as the nearest Buffalo construction company is $30,000 higher. Structural steel will be fabricated in North Milwaukee, Wis., and shipped by water after 1932 navigation opens.

Pittsburgh—Structural awards are light and although several fairly large projects are pending orders are the smallest in a number of weeks. Plain shapes continue 1.50c to 1.60c, with no announcement made of the first-quarter market. Fabricators are pointing for the Pittsburgh postoffice, expected Dec. 15.

Cleveland — Though award of structural steel on building work has been absent the past week, a small quantity of work is promised for closing this week. Included is the Columbus, O., baseball park, and state bridgework of the Dec. 8 letting. The local Goodyear station has been deferred until Dec. 14 for general contractor bids. Plans are now expected out in March for the Cleveland postoffice, about 13,000 tons. A power house for Oberlin college, Oberlin, O., is proposed and Warner Bros. will build a theatre at Mansfield, O. Plain material is generally 1.60c, Pittsburgh, to the trade on the light character of present buying.

Chicago—Indications are that formal announcement of mill prices for first-quarter structural material may be named soon, but coverage has been extended at the existing range of 1.60c to 1.70c, Chicago, for several individual projects, against which shipments are to be scheduled for January. Chicago south park commission is letting about 700 tons of steel piling for bulkheads at the mouth of the Chicago river. Some estimates are that 50,000 tons of structural steel may be let in the Chicago mill area in the next 90 days, but only half that amount is considered active. Due to injunction proceedings, 1000 tons of structural steel, and 1500 tons of steel piling for the Mississippi river dam at Alma, Wis., have been postponed indefinitely.

St. Louis—Fabricators report orders gradually diminishing. Business consists of small jobs. Several projects involving substantial tonnage are pending, and will take form shortly after Jan. 1. Missouri highway commission has advertised contracts involving 756 tons of structural steel for bridges, and 1500 tons for reinforcing bars for culverts and other construction work.

Awards Compared

	Tons
Awards, week ended Dec. 12	19,815
Awards, week ended Dec. 5	19,047
Awards, week ended Nov. 28	24,659
Awards, this week in 1930	37,007
Av. weekly awards, 1930....	35,242
Av. weekly awards, 1931..	34,520
Av. weekly awards, Nov....	17,984
Total awards to date, 1930..	1,796,580
Total awards to date, 1931..	1,725,983

Contracts Placed

7400 tons, sheet steel piling, three piers, West Forty-eighth, Fiftieth and Fifty-second streets, Hudson river, department of docks, New York, to Bethlehem Steel Co., Bethlehem, Pa.; Allen N. Spooner & Sons, general contractors. Work is for substructures only.

1200 tons, stone crushing plant, Cold Springs, N. Y., to American Bridge Co., Pittsburgh.

1200 tons, Union station power house, Chicago, to American Bridge Co., Chicago.

1000 tons, parochial school, Brooklyn, N. Y., to American Bridge Co., Pittsburgh.

800 tons, building, Knickerbocker Laundry Co., Brooklyn, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

640 tons, school No. 248, New York, to Bershire Structural Steel Co., Brooklyn, N. Y.

625 tons, Saulter street viaduct, Winnipeg, Man., to Dominion Bridge Co. Ltd., Lachine Locks, Que.

600 tons, bridges at Ada and Walton, Okla., to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.

585 tons, bridge over Red river, Vernon, Tex., for Texas state highway commission, to Mosher Steel & Machinery Co., Dallas, Tex.; W. S. Crawford, Dallas, contractor.

550 tons, addition, Bowery Savings bank, New York, to unstated.

500 tons, apartment, Cambridge, Mass., to Lehigh Structural Steel Co., Allentown, Pa.

470 tons, bridge, Worcester-Shrewsbury route, Mass., to McClintic-Marshall Corp., Bethlehem, Pa.

400 tons, state bridges, New York, about evenly divided between American Bridge Co., Pittsburgh, and Lackawanna Steel Construction Co., Buffalo.

300 tons, part of 1500 tons to be let for grain elevator for Albany, N. Y., port authority, to McClintic-Marshall Corp., Bethlehem, Pa., and several other fabricators; James Stewart Corp., Chicago, general contractor.

275 tons, one 70-foot and two 170-foot spans, unstated location, for Illinois state highway commission, to Vincennes Bridge Co., Vincennes, Ind.

230 tons, office building, Waterloo, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

200 tons, east cell block, Dannemora prison, Dannemora, N. Y., to American Bridge Co., Pittsburgh; Amsterdam Building Co. Inc., contractors.

200 tons, Missouri state highway bridges, Grundy County, Mo., to St. Joseph Structural Steel Co., St. Joseph, Mo.

200 tons, bridges, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

200 tons, steel beam bridge, Ottawa county, O., to International Derrick & Equipment Co., Columbus, O., through Dodge-Hussey Inc., Columbus. State bids of Nov. 17.

185 tons, Broad river, Wilkes and Elber counties, Ga., to McClintic-Marshall Corp., Bethlehem, Pa., through F. A. Triplett, contractor; 65 tons reinforcing to Dudley Bar Co., Chattanooga, Tenn.

165 tons, Kroger Co., warehouse, Cincinnati, to Dayton Structural Steel Co., Dayton, O.

150 tons, school, Thirty-second street, Philadelphia, to McClintic-Marshall Corp., Bethlehem, Pa.

150 tons, reformatory building, Rahway, N. J., to Jersey Steel Co., Trenton, N. J.

150 tons, high school, Kansas City, Mo., to Kansas City Structural Steel Co., Kansas City.

140 tons, high school, East Nashville, Tenn., to Nashville Bridge Co., Nashville; V. L. Nicholson Co., Nashville, contractor.

140 tons, plate roof for Buffalo Tank Corp., to Truscon Steel Co., Youngstown, O.

135 tons, road underpass, Piney Branch, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.

135 tons, school, Rising Sun avenue, Philadelphia, to Henry A. Hitner Sons Co., Philadelphia.

130 tons, girder span over relocated tracks of Pennsylvania railroad, North street, Elkton, Md., state project, to McClintic-Marshall Corp., Bethlehem, Pa., bids Nov. 17.

120 tons, bridge, Lakeville, Mass., to Boston Bridge Works Inc., Boston.

120 tons, wharfage work, Mobile, Gulf & Northern railroad, Mobile, Ala., to Virginia Bridge & Iron Co., Roanoke, Va.

110 tons, girder span bridge, relocated tracks, Pennsylvania railroad, Bridge street, Elkton, Md., state project, to Phoenix Bridge Co., Phoenixville, Pa.; bids Dec. 1.

110 tons, school Garfield, Calif., to Consolidated Steel Corp., San Francisco.

100 tons, or more, shapes and bars, school addition, Delaware City, Del., to American Iron Works, Camden, N. J., and American Steel Co., Philadelphia, through P. Lenz, contractor.

100 tons, Christian Science church, Chicago, to Midland Structural Steel Co., Chicago.

100 tons, high school, Portland, Conn., to Eastern Bridge & Structural Co., Worcester, Mass.

Unstated tonnage, addition to Woodward Ltd., department store, Vancouver, B. C., to Western Bridge Co. Ltd., Vancouver.

Contracts Pending

4000 to 5000 tons, Franklin memorial, Philadelphia; specifications reported postponed until after Jan. 1, 1932.

2000 tons, highway bridge, Seneca, Ill.

2000 tons, postoffice, Portland, Oreg.; Murch Bros., St. Louis, contractor.

1600 tons, bridges for Missouri highway commission.

1200 tons, bridges for Minnesota highway commission.

1000 tons, Mississippi river lock and dam, Alma, Wis., postponed indefinitely because of injunction proceedings.

765 tons, miscellaneous bridge and culvert work, Missouri highway commission, Jefferson City, Mo.

700 tons, addition, Library of Congress, Washington; bids Jan. 12.

650 tons, Pennsylvania railroad bridge over Elk river, Maryland; bids Dec. 22.

500 tons, Black Diamond bridge, King county, Wash.; plans being prepared.

390 tons, signal towers, Wilmington, Del.-Washington, electrification work, Pennsylvania railroad; American Bridge Co., Pittsburgh, low. Approximately 1000 tons, shapes and plates, this type of work, to follow.

350 tons, cell block, prison, Attica, N. Y.; John Johnson Construction Co., Buffalo, low.

300 tons, municipal pier shed, Trenton, N. J.; McClintic-Marshall Corp., Bethlehem, Pa., low.

200 tons, college unit, Wellesley, Mass.

200 tons, building, Boyertown Casket Co., New York.

200 tons, factory, Riverside avenue, Newark, N. J.

296 tons, bridge, route 2, section 6, over Hudson River Traction Co. tracks and Pleasant avenue, Rochelle Park and Paramus, N. J., bids Dec. 21, New Jersey state highway commission, A. Lee Grover, chief clerk. Work also requires 64 tons reinforcing bars.

180 tons, state bridge, Monmouth county, N. J.

150 tons, telephone exchange, Woodland avenue, Philadelphia.

150 tons, state bridge near Lancaster, Pa.

150 tons, Goodyear Tire & Rubber Co. building, Cleveland; general contractor bids postponed until Dec. 14.

145 tons, state bridge, Carmel, Me.

137 tons, coliseum building, Oklahoma City, Okla., also 50 tons reinforcing bars.

100 tons, hospital unit, Waltham, Mass.

100 tons, bridge to carry route 35 over tracks, Freehold & Jamesburg railroad, Manasquan, N. J.; bids Dec. 28, New Jersey state highway commission, A. Lee Grover, chief clerk, Trenton, N. J.

Unstated tonnage, power house, Oberlin college, Oberlin, O.

Unstated tonnage, theater, Mansfield, O., for Warner Bros.

Unstated tonnage, federal postoffice, Norwalk, O.

Unstated tonnage, bridges, Binghamton and Whitney Point, N. Y., for Delaware, Lackawanna & Western; bids Dec. 26.

Unstated tonnage, Pennsylvania railroad; bids Dec. 22.

Concrete Bars

New York Bridge, Large Lot, Goes in Dec. 29—Illinois Opens Bids Dec. 21 on Roadwork—Pending Work Promises Award After Jan. 1, 1932

REINFORCING BAR PRICES, PAGE 49

New York—Activity in reinforcing bars has again dropped, awards in the district probably being under 1000 tons. Fresh inquiry is also off. Bids are in on several state hospitals, bridges and prison work, also a subway at Newark, second section, west side elevated highway and other public work with the result pending tonnage, is heavy, a good part of the steel for which will not be let until after Jan. 1, 1932. Bids close this week on another pier, Harlem river, taking about 225 tons. Westchester county sewer contracts closing this week and others on which bids are in, take several hundred tons, although bar tonnage is somewhat reduced by the use of large cast iron pipe. The Cohoes-Waterford bridge will go reinforced concrete to take a heavy tonnage of bars, bids closing Dec. 29 with the state department of public works.

Boston—Reinforcing bars are dull, awards being light and limited largely to small lots on which prices are fairly steady. Pending tonnage is mostly for bridges and other public work.

Philadelphia—Reinforcing bars are fairly steady at 1.60c, Pittsburgh, on mill lengths. Buying is spotty. For a Pennsylvania railroad bridge, Elkton, Md., 640 tons have been bought.

Pittsburgh—Orders still make a favorable showing, while shipments also are steady. Inquiry shows some seasonal decline and is made up mostly of small lots. The market for billet bars generally is 1.60c, Pittsburgh, for mill lengths.

Cleveland — Considerable interest is hinging on the Dec. 18 state bridge and highway work letting to involve a considerable amount of reinforcing steel in smal lots. Locally, building operations are at an

(*Concluded on Page* 57)

Awards Compared

	Tons
Awards, week ended Dec. 12	**5,700**
Awards, week ended Dec. 5	**6,120**
Awards, week ended Nov. 28	**2,543**
Awards this week in 1930..	**2,915**
Av. weekly awards, 1930..	**6,990**
Av. weekly awards, Nov.....	**6,358**
Av. weekly awards, 1931....	**7,040**
Total awards to date, 1930..	**360,137**
Total awards to date, 1931	**352,020**

Strip

First Quarter Quotations Slow to Appear—Buying Moderate but Better Than November Rate

STRIP PRICES, PAGE 49

Pittsburgh—Strip shipments make a favorable comparison with the November rate but demand is spotty and mill operations irregular. Automotive orders have improved only gradually with releases from Ford still awaited. Requirements of miscellaneous consumers are tending downward. Some first quarter inquiry is appearing and although mills defer announcement of prices little change is looked for from the present market. Hot strip continues 1.50c and 1.60c for the two widths, with cold-rolled strip 2.05c to 2.15c.

Philadelphia—Hot-rolled strip is weak at 1.45c to 1.50c, Pittsburgh, and 1.55c to 1.60c, Pittsburgh, for wide and narrow, respectively, one seller having named the lower figure for first quarter delivery. Cold-rolled is held at 2.05c, Pittsburgh. Demand is listless.

Cleveland—Although considerable price discussion arose last week over the two hot-rolled widths, the 1.50c and 1.60c Pittsburgh base prices are holding as minimum on carloads and over. Small takers are paying $1 a ton or more over these figures. Not all mills have opened books or made announcement for first quarter. Last week saw some fair-sized hot-rolled specifying, but typical in the type of deliveries demanded was a release given on Dec. 10 for shipment four days later. Cold-rolled in quantity is 2.05c, Cleveland; for small orders 2.15c is quoted. The local mill's hot strip mill was running all last week.

Operations Off Fraction Last Week, 25.5 Per Cent

Youngstown, O.—Steel ingot production in the district averaged 28 per cent capacity in the week ended Dec. 12, off four points from the preceding week, and is likely to show little change this week. Several developments, including possible resumption at the Warren, O., open-hearth department of Republic Steel Corp., where repairs are being made, may lift the present rate slightly by Dec. 17. Another Valley steelmaker is clearing its charging floor and assembling raw materials, apparently for early additions to its steel melting rate. Seventeen of 66 open hearths were active Dec. 12 and were expected to be melting the first half of this week.

Philadelphia—Steel production was unchanged last week at 23-24 per cent, following the five-point decline the week prior. For this week a slight decline is expected.

Buffalo—District steelworks are expected to boost their operations about eight points this week to 35 per cent after operating at 27 per cent last week. At the end of this week the rate will be reduced to about 27 per cent again and the process of dropping units is expected to continue thereafter until the holidays are reached, when a complete shutdown seems in prospect.

	Per Cent
Operations, week ended Dec. 12	25.5
Operations, week ended Dec. 5...	26
Operations, week ended Nov. 28	29.5
Operations, this week, 1930.....	38
High for 1931 (March 19)	57
Low for 1931 (Dec. 12)	25.5

Pittsburgh—Ingot production held last week for the third week at 28 per cent. The outlook is for only a small decline in the near future. Blast furnace schedules have been increased to 11 active steelworks stacks out of 54, an increase of one furnace in blast. Sheet output is higher at nearly 30 per cent with tin plate unchanged at 48. Strip and pipe production continue at 25 per cent.

Cleveland—Ingot production was 33 per cent last week, off two points from the week before. For this week indications point to a continuation of the 33 per cent rate, which represents three active Otis Steel open hearths and four each at American Steel & Wire and Corrigan, McKinney Steel Cos.

Chicago—Further open-hearth reduction brings production schedules this week to 22 to 23 per cent, although the ingot production rate held closely to 24 per cent in the week just closed. Steelworks blast furnace operations are variable, as the Joliet, Ill., furnace is being banked during alternate weeks. Finishing mill departments range at 20 to 32 per cent. Rail mill operations are about 25 per cent.

Birmingham, Ala. — Operations were unchanged at 30 per cent of capacity last week, the same level expected to hold this week. Plans are for a continuation of this rate until the last week of December. Gulf States Steel Co. continues its plan of alternating weekly in operating and shutting down three open hearths. Seven additional open hearths are in readiness for immediate resumption if demand warrants.

Warehouse Sales To Ease Over Rest of Month

Warehouse Prices, Page 71

New York—Volume is light with most warehouse distributors, dullness prevailing on all products with the possible exception of cold-finished steels. The latter shows a spotty improvement from time to time, generally failing to maintain gains for long. Prices are being shaded, although here again cold-finished stock is steadier.

Philadelphia — Trading is fairly well maintained, with declines expected over the remainder of December. Prices are weak, but unchanged.

Pittsburgh—Sales are tending downward gradually, reflecting poor industrial activity and seasonal influences. No changes in prices are expected from recent revisions in mill quotations.

Detroit—With the usual inventory letdown, steel jobbers are experiencing a slight reduction in sales, though the volume from day-to-day varies little from that during late November.

Cincinnati—Shrinkage in warehouse demand is following the usual pre-holiday trend, destroying hopes that the buying rate established in October and November might be maintained. Prices are steady.

Chicago — Warehouses have reduced prices on cast iron washers 25 to 50 cents per 100 pounds to $3.25, and standard malleable washers have been reduced 25 cents to $7 for 200 pound lots or over. Jobbers contemplate no advance in wire products prices. The $2.30 base for common and cement coated nails is only 5 cents per 100 pounds above the less-carload mill price. December orders are a shade under November.

St. Louis—Business so far in December is about on a parity with the low average of November. Materials for road construction and other outdoor work are relatively active.

Concrete Bars Placed

(*Concluded from Page* 53)

apparent standstill and no new work has come into the market recently for figures. For the Nine Mile creek job here, Hecker-Moon Co. has finally been awarded the general contract. The job calls for about 2000 tons of new billet reinforcing steel.

Chicago—Operations of reinforcing bar fabricators are slowing down sharply. Shipments on the pending Illinois road work have been virtually stopped for the season. Illinois highway department will open bids Dec. 21 on $3,900,000 in road and bridge work, including 1200 tons of bars. Some of this is readvertised work. About 200 tons has been let for the Union station power house in Chicago. Rail steel bar prices range at 1.30c to 1.50c.

Rail steel reinforcing bars have been advanced to a spread of 1.55c-1.70c, Chicago. Prices are unchanged for bridge and culvert work.

Contracts Placed

2000 tons, grade crossing, Albany, N. Y., for Delaware & Hudson railroad, to McClintic-Marshall Corp., Bethlehem, Pa., through Booth & Flinn, Pittsburgh, contractors.

640 tons, Pennsylvania railroad bridge, Elkton, Md., to Concrete Steel Co., New York, through H. L. Moss & Co., Baltimore, contractor.

395 tons, foundations, postoffice, Detroit, to Concrete Steel Fireproofing Co., Detroit, through Walbridge-Aldinger Co., Detroit.

375 tons, Peoples' National Bank building, Tyler, Tex., to Austin Bros., Dallas, Tex.; American Construction Co., Houston, Tex., contractor.

300 tons, apartment, noncommissioned officers, Fort Jay, Governors Island, New York, to Igoe Bros., Newark, N. J.; Longacre Construction & Engineering Co., contractor.

300 tons, airport hangar, navy department, Sunnyvale, Calif., to Soule Steel Co., San Francisco; Raymond Concrete Pile Co., New York, contractor.

285 tons, school, Thirty-second street, Philadelphia, to Kalman Steel Corp., Bethlehem, Pa., through Cramp & Co., Philadelphia.

250 tons, bridge, Wausau, Wis., to Concrete Steel Co., New York.

200 tons, bridge, Vernon, Tex., for Texas state highway commission, to Central Texas Iron Works, Waco, Tex., through Texas Contractors Supply Co.; W. S. Crawford, Dallas, Tex., contractor.

200 tons, rivets, pipe band fittings and cable guard fittings for miscellaneous jobs, to Northwest Bolt & Nut Co., Seattle.

200 tons, Union station power house, Chicago, to Calumet Steel Co., Chicago.

175 tons, school, Philadelphia, to Truscon Steel Co., Youngstown, O.

175 tons, mesh and bars, highway and bridges, state project, Albany county, New York, to Albany Steel & Iron Supply Co., Albany, N. Y.; Sheehan Company, Albany, contractor. Lackawanna Steel Construction Co., Buffalo, awarded 85 tons structural.

170 tons, high school, East Nashville, Tenn., to Wilson-Weesner-Wilkerson Co., Nashville; V. L. Nicholson Co., Nashville, contractor.

140 tons, Cincinnati public school building, Bond Hill, O., to West Virginia Rail Co., Huntington, W. Va.; Penker Construction Co., Cincinnati, contractor.

100 tons, Ionia state hospital building, Ionia, Mich., to McRae Steel Co., Detroit, through Patterson Engineering Co. Inc., Detroit; 70 tons shapes to R. C. Mahon Co., Detroit.

Contracts Pending

2000 tons, Nine Mile creek culvert sections; Hecker-Moon Co., Cleveland, contractor.

1500 tons, Missouri highway commission, Jefferson City, Mo.

1200 tons, Illinois road and bridge work; bids Dec. 21.

1000 tons, highway projects in Missouri.

840 tons, cell block, state prison, Attica, N. Y., bids in; John Johnson Construction Co., Buffalo, low.

800 tons, sewer No. 5, Chicago sanitary district, in addition to 600 tons for Twenty-second street sewer.

400 tons, sewer, East Orange, N. J.

300 tons, state grade elimination, Cumberland, Md.; P. H. Shaid, Elkins, W. Va., contractor.

225 tons, bars and piling, pier, 107th street, Harlem river, department of docks, New York; bids in.

150 tons, two incinerator plants, Washington; bids in.

115 tons, piers, Union Terminal Co., Cincinnati; Temple Foundation Co., Cincinnati, reported low on general contract.

100 tons, bridge over Freehold & Jamesburg railroad, Manasquan, N. J., and Back Creek bridge and approaches, Lakeside, N. J.; bids Dec. 28, New Jersey state highway commission, A. Lee Grover, chief clerk, Trenton, N. J.

100 tons, training school, state project, North Paltz, N. Y.

Foreign Manganese and Manganiferous Ores Lower

New York—South African manganese ore prices have been reduced, the 52 per cent grade now being 23 to 24 cents per unit, in carlots, not including duty, a down spread of 1 cent. The 49-51 per cent grade also has been lowered 1 cent to 22 to 23 cents. Foreign manganiferous ore, 45-55 per cent iron, 6-10 per cent manganese, has been reduced to 9.50 cents to 10.00 cents per unit, alongside docks, Atlantic ports. The former price was 10.00 cents. Northern African low phosphorus ore has been revised to 8.00 cents to 9.00 cents, per unit, alongside docks Atlantic ports. Chrome ore, 48 per cent, has been marked down to $18 to $19, from $21.50 to $22, per net ton, c.i.f.

Call Gray Iron Meetings

Cleveland—Two more meetings for gray iron foundrymen in the eastern states have been scheduled by Arthur J. Tuscany, manager of the Gray Iron Institute Inc. A meeting will be held at the Carteret club in Jersey City, N. J., Dec. 7, and another at the Manufacturers' club in Philadelphia, Dec. 21.

McGill Mfg. Co., Valparaiso, Ind., automotive parts manufacturer, has received a $500,000 order from Chrysler Motor Co. for transmission bearings.

Pipe

Washington Places 3000 Tons Cast—Buffalo Program May Change to Steel

PIPE PRICES, PAGE 71

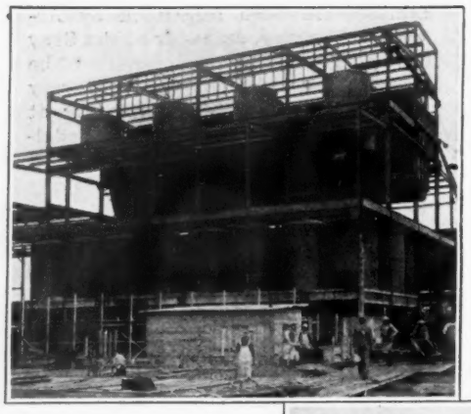
Chicago—Postponement of 10,000 tons of 20-inch steel pipe for the proposed 85-mile line from Geneseo to Rockford, Ill., has been made for at least 90 days. This eventually will be a link of the extension of the Texas-Chicago natural gas line to Milwaukee, the entire Chicago-Milwaukee extension to take about 30,000 tons. Ft. Wayne, Ind., is buying 1500 tons of miscellaneous sizes of cast for sewage treatment works. South Milwaukee, Wis., is taking bids on 1000 tons of 24-inch cast, and Galesville, Wis., has closed on 100 tons of 6 and 8-inch.

New York—Additional bids close Dec. 18 on contracts taking several thousand tons of large cast pipe, including 48 and 60-inch for Westchester county. Part of 1000 tons, on which bids are already in, still pends. Plans are being made for water line changes in Manhattan to require at least 5000 tons of 48-inch, work to become active soon after Jan. 1, 1932. Several medium lots pend for upstate and eastern Pennsylvania. A small lot for West Point, N. Y., went to United States Pipe & Foundry Co Prices continue easy.

Buffalo—Strong efforts are being made to have the city depart from its long established custom of buying cast iron pipe for water lines. This commodity is not made in this district but steel pipe is manufactured here. The city is about to invest more than $2,200,000 in a main construction program and must decide

TENNESSEE STEEL—

in SMALL TANKS



Thousands of tons of Tennessee Plates and Sheets are annually consumed in the manufacture of small storage and miscellaneous tanks. Adapted either to welded or riveted construction and furnished in all standard qualities and finishes, Tennessee products admirably fulfill the requirements of the tank builder.

Tennessee produces a full line of rolled steel products, including in addition to the above, structural shapes, bars, rails and accessories, in standard and special analyses.

TENNESSEE COAL, IRON & RAILROAD COMPANY

General Offices: Brown-Marx Building, Birmingham, Ala.

Subsidiary of United States Steel Corporation

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES

American Bridge Company
American Sheet and Tin Plate Company
American Steel and Wire Company
Carnegie Steel Company
Columbia Steel Company
Cyclone Fence Company
Federal Shipbuilding and Dry Dock Company
Illinois Steel Company
Minnesota Steel Company
National Tube Company
Oil Well Supply Company
The Lorain Steel Company
Tennessee Coal, Iron & R. R. Company
Universal Atlas Cement Company

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif.

Export Distributors—United States Steel Products Company, 30 Church Street, New York, N. Y.

on material at once in order to have first deliveries made early in 1932.

Pittsburgh—Orders for most tubular products are in light and unchanged volume. Outlook for additional line pipe business is confined largely to the future, with only a moderate tonnage involved scheduled for early closing. Backlogs of line pipe are light and operations hold around 25 per cent.

Birmingham, Ala.—Bids are out on several projects mainly in the far West and cast iron pressure pipe shops here are confident of portion of business. Operations are being held to 40 per cent capacity. December holiday close down will be limited to week to 10 days at most.

Cast Pipe Placed

3000 tons, 6 to 24-inch, centrifugal, Washington suburban sanitary commission, Washington, to R. D. Wood & Co., Florence, N. J.

400 tons, Scarsdale, N. Y., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

450 tons, 6-inch, Public Service Electric & Gas Co., Roseland, N. J., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

100 tons, 6 and 8-inch, Galesville, Wis., to American Cast Iron Pipe Co., Birmingham, Ala.

Cast Pipe Pending

1500 tons, miscellaneous sizes, Ft. Wayne, Ind., sewage treatment works, being purchased through Max Irmscher & Son, Ft. Wayne, contractor.

1000 tons, 24-inch, South Milwaukee, Wis.; bids Dec. 14.

160 tons, large sizes, sterilization plant, North Yonkers, N. Y.; Northeastern Construction Co., contractor.

Steel Pipe Placed

300 tons, up to 14-inch, heating, 15 state hospital buildings, Pine Aire Station, N. Y., to Bethlehem Steel Co., Bethlehem, Pa., through Raisler Heating Co., New York, contractor.

Unstated tonnage, 280 sections, 18-inch i. d. welded shore pipe, United States engineer, Memphis, Tenn., to Caldwell Foundry & Machine Co., Birmingham, Ala.

Steel Pipe Pending

10,000 tons, 20-inch for 85-mile gas line from Geneseo to Rockford, Ill., first link in Chicago-Milwaukee line of Continental Construction Corp., Chicago; postponed for 90 days or more.

Unstated tonnage, approximately 4616 linear feet various sizes from ¾ to 8-inch, government lock, Harvey, La.; bids Dec. 15, United States engineers, New Orleans.

Unstated tonnage, 8½-mile natural gas line, Chanute, Kans., for R. and G. Willis and associates, Chanute, Kans.

Unstated tonnage, 10,500 feet, galvanized and wrought iron, mostly 2-inch, department of water supply, New York; bids Dec. 18.

Wire

New Pricing Plan Delays Buying for First Quarter—Present Contracts Will Expire Jan. 15

WIRE PRICES, PAGE 49

Chicago — Advanced prices announced for first quarter are expected to drive in specifications on existing contracts late this month. Specifications from jobbers failed to gain in the last week. Sentiment has improved among southern jobbers. The fact that several additional western states are authorizing wire mesh as a part of their road construction and surfacing programs indicates sales increases. An upturn in wire mesh road sales occurred in several western and southern states during the last season.

Worcester, Mass.—Production is showing the year-end sag. Inventory season is cutting down shipments and the market is ending the cycle of slight advance which had been apparent for the past two months. Prices are firm at 2.30c, base, Worcester.

New York—Wire nail sellers here generally are adhering to the new $1.95, Pittsburgh, price, although too little business has developed to afford a test. Plain wire is steady at 2.20c, Pittsburgh.

Pittsburgh—Wire shipments are quiet and little changed while contracting is light. Changes in methods of pricing wire products as announced recently for first quarter business now are being considered by buyers and some delay is expected in signing for first quarter requirements. The new schedule includes advances of $1 to $3 a ton on several items. Current shipments are being made against old prices of $1.90 a keg to jobbers for wire nails. Plain wire continues 2.20c on present and first quarter business. Buyers are slow to place specifications for later delivery although shipments against present contracts are to be completed Jan. 15.

Cleveland — Although the base shipping revisions have been made on wire and wire products effective Dec. 1, it will probably be the turn of the year before test is actually given to the new classification, when contracts come up for renewal. In the meantime releases for all wire products display the depressed tone of the past several months.

Supplies Navy Yard Steel

New York—Simonds Steel & Saw Co., Fitchburg, Mass., has been awarded 12,830 pounds of corrosion-resistant steel for the Mare island navy yard on a bid of $4105.60.

Semifinished Contracts For First Quarter Slow

Semifinished Prices, Page 60

Pittsburgh — Shipments of semifinished steel have been steady so far this month, but little new business is appearing. Consumers are placing few orders for first quarter shipment and prices show no change except on wire rods, which have been advanced $2 to $37, Pittsburgh. On current business in billets, slabs and sheet bars the market usually is $29, but is provided little test. Forging billets continue $35.

Philadelphia — The market for semifinished steel is untested, with rerollers quoted nominally at $29, Pittsburgh; and forging quality, $34.

Youngstown, O.—Slower rates of operations in sheet and strip mills has continued to narrow demand for sheet bars and billets. Attention has been centered on the more active branch of the market, wire rods. Billets, sheet bars and slabs are $29, Youngstown and Pittsburgh, and wire rods are $37, Pittsburgh and Cleveland.

Cleveland — Forward contracting for semifinished steel has been growing less and less from one quarter to the next for the past two years, and few definite commitments have been made for January, February and March. No change in price is indicated, sheet bars and slabs continuing $29, base, Cleveland and Youngstown, O. Billets have been shaded in a few instances, but the usual price is $29, with $5 additional for forging quality. For the 774 trucks to be built by the White Co., for New York, 450 tons of billets, part forging, have been placed with a local forge shop.

Chicago—Semifinished prices remain nominal in this market. Wire rods now are quoted $36 to $38, Chicago. Shipments of sheet bars for automotive production have gained slightly.

Three million homes are estimated to require repairs costing $500,000,000; doing this work is urged to relieve unemployment.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$16.50 to 17.00
Pittsburgh, dist. fur.	17.00
Pittsburgh, delivered	17.63 to 18.13
Valley furnace	15.50 to 16.00
Cleveland fur., local del.	16.00
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.15 to 19.90
Buff., all-rail, Newark	17.53 to 18.28
Ala., Bir. fur., local del.	12.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.00 to 16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	16.00 to 16.50
Cleveland fur., local del.	16.00
Pittsburgh dist. fur.	17.00
Pittsburgh, delivered	17.63 to 18.13
Chicago, furnace	16.50 to 17.00
Buffalo fur., local del.	17.50
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Eastern Penn., del.	16.00 to 16.50
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	16.00 to 16.50
Pittsburgh, delivered	17.63 to 18.13
Pittsburgh, furnace	17.00

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.50
Pittsburgh district fur.	16.50
Pittsburgh, delivered	17.13 to 17.63

CHARCOAL

Lake Superior, del. Chi.	20.04 to 23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$19; 7—$19.50; 8—$19.00 to $21.00; 9—$20.50; 10—$21; 11—$22; 12—$23; 13—$25.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.35 to 2.40
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$11.00 to 11.25
Chrome ore, 48% net ton c.i.f.	$18.00 to 19.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	22.50 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$40.00
Missouri	37.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 35.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$45.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00
Pittsburgh, bessemer	29.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00
Forging, Philadelphia	39.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00 to 37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

For 1932 delivery

(In dollars, except Ferrochrome)

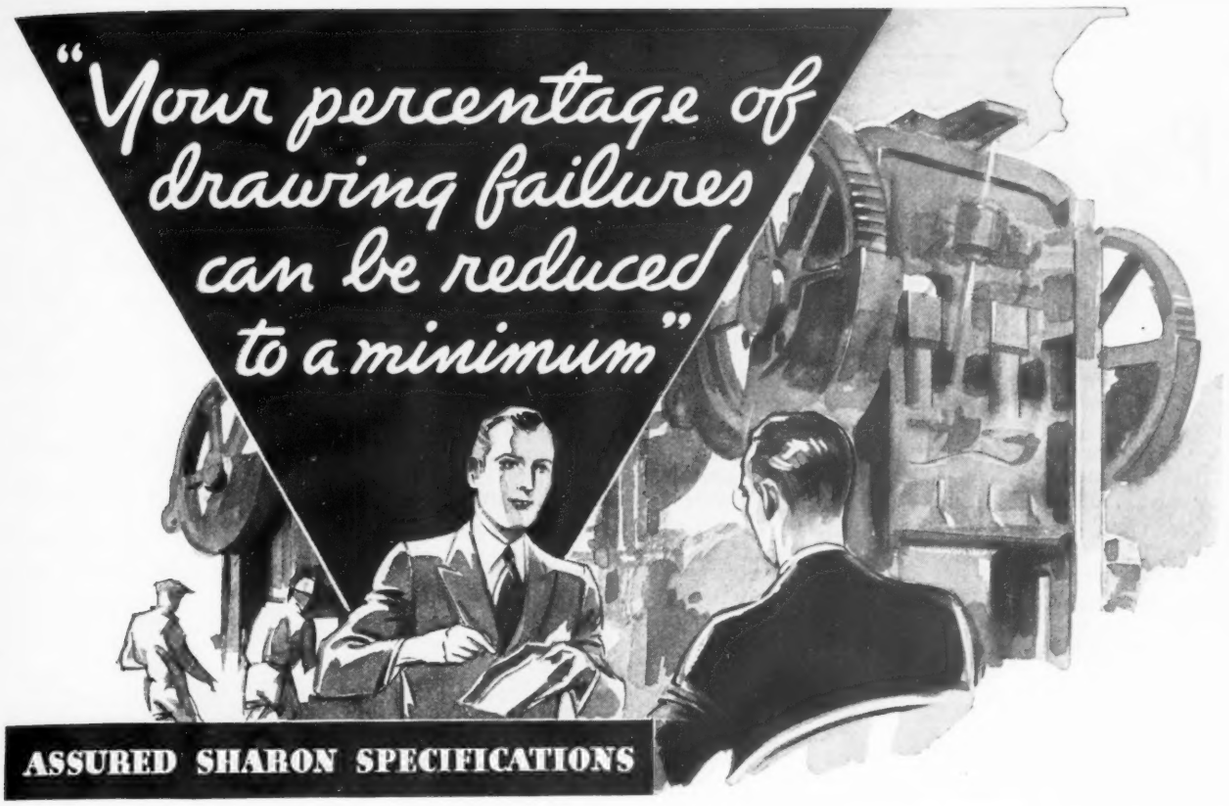
*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	79.79
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb., con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferro-titanium carload producers' plants, net ton	140.00
Do, one-ton to c. l.	160.00
For 1932 contracts, f.o.b. freight allowed	140.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent, per lb.	$1.00
Cal. Molybdate, lb. cont.	.85

†Carloads. Differentials apply to quant
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky, Illinois mines, net ton	$13.00
Washed gravel, import duty paid tide, gross ton	13.50



—AND PROVED IT BY DEVELOPING A NEW STEEL TO MEET THE SEVERE DEMANDS

A steel sheet that was showing too great a deficiency in drawing quality was the problem a manufacturer of a large electric appliance was facing. "Sharon Specifications"—Sharon's comprehensive engineering service went to work on the case to search out this costly trouble. ▼ Here's what followed: a careful study of the product requirements and the manufacturer's production methods—metallurgical research and tests on the steel being used—development in Sharon Mills of a steel of proper characteristics, chemically and physically, to meet all the exacting demands of fabrication. Consistent uniformity in quality, with reduction of failures to a minimum, was the manufacturer's gain in this instance. ▼ Give your steel sheet or strip product a "Sharon Specifications" examination. It may mean improved quality, plus savings in production. It will certainly insure the proper steel for the purpose. Write for further details about this valuable service.

SHARON STEEL HOOP CO.—SHARON, PA.

Strip Steels
Hot and Cold Rolled
—•
"Nevastain"
Stainless Steels
—
Steel Sheets
—
SAVE WITH STEEL

Pig Iron

Cleveland and Chicago Prices Reduced—Two Alabama Furnaces Blowing Out

PIG IRON PRICES, PAGE 60

Pittsburgh—The pig iron market is dull and unchanged. Few releases are being received for January shipment and consumers are holding stocks at a minimum. Practically no inquiry is appearing for first quarter, with prices continuing $16, valley, for No. 2 foundry, $16.50 for bessemer and malleable and $15 for basic.

Boston—Some iron has been sold for early first quarter delivery, and total sales are slightly heavier. Prices are inclined to be easier. Little Pennsylvania iron is being sold here and one maker is reported to have withdrawn from the New England market.

Foreign iron through Boston has been offered at $18 on future shipment. While about $17.50, furnace, is the average on local furnace sales, some concessions have been granted. Buffalo and eastern New York prices are reported to have been shaded 50 cents.

New York—Pig iron sales in the week totaled 5000 to 6000 tons. In addition there was some quiet buying for first quarter. Prices here generally are unchanged.

It is reported that the Port Henry, N. Y., furnace will be blown out about Jan. 1.

Philadelphia—The market is featured by the purchase of 2000 tons of eastern Pennsylvania iron by the Bartlett, Hayward Co., Baltimore, for delivery in the next three months. General business is quiet and prices are easier. Eastern Pennsylvania plain is holding at $15.26 to $15.76, Philadelphia, but No. 2X now is $15.76 to $16.26; No. 1X is $16.26 to $16.76. No important sales of malleable have been reported in months.

Buffalo—Current demand for pig iron is quieter and interest in first quarter is lacking. Only one furnace in the district is making ordinary merchant iron, although three others are in production.

Youngstown, O.—Keener competition has developed in the valley for the little local business, and the price for outside delivery is easier. The valley furnace price has been lowered to consuming points within a short distance of Cleveland. Two merchant furnaces now are operating, one at about half time. Shipments are continuing as in recent weeks. Bessemer and malleable now are $16 to $16.50, valley; No. 2 foundry, $15.50 to $16; gray forge, and No. 3 foundry, $15.50; and copper-free low phosphorus, $27.

Cleveland—Pig iron producers here have reduced prices $1 a ton to $16, base, furnace, for local delivery, effective immediately and for first quarter. In March the price was reduced from $17.50 to $17. Makers say the new level is the lowest for local delivery since 1917. The reduction is intended to equalize local and outside prices, for some time $15 to $16. Competition from outside furnaces has been especially keen in northern Ohio and has threatened to enter the local market. The valley minimum of $16, base, is reported shaded. A northern Ohio melter closed for 2500 tons for first quarter, and the total of sales booked in the week by furnace interests with headquarters here was approximately 6000 tons. Inquiry for first quarter has improved, but producers do not expect much betterment in business until after the first of the year.

Cincinnati—Buying of pig iron last week was limited to carload lots, with almost no interest in first quarter needs. One furnace producing foundry iron and hot metal for rolling has been banked, with enough iron in stock to meet early demands. So far this has had no influence on northern iron prices, and southern iron remains $11, base, Birmingham.

St. Louis—Pig iron stocks at foundries and mills are ample for the remainder of the year, and in some instances substantial tonnages on hand or due on contract will be carried into 1932. The few small sales made recently have been for jobbing foundries. Competition is keener.

Chicago—Further sales of first quarter pig iron have developed, but December shipments are lagging behind November. Competition of $16.50 for base grades is being met by sellers generally. Charcoal iron from lake docks is being sold on the basis of coke iron, and the range is $20.04 to $23.04, delivered Chicago. About 600 tons of castings will be placed for the Mississippi river lock and dam at Rock Island, Ill.

Chicago furnace prices have been reduced 50 cents to $16.50 to $17, base. A northern Illinois melter purchased 400 tons of higher silicon iron. Inquiry has improved slightly.

Birmingham, Ala.—The market is dull, and further retrenchment is expected to be made in blast furnace operations, now at 50 per cent. Woodward Iron Co., Woodward, Ala., plans to blow out its two active stacks in a few days.

Toronto, Ont.—Melters remain out of the market, only two sales being noted during the week, for a total less than 300 tons. Little business is likely to develop until January.

Ferroalloys Are Reduced; Ferromanganese Down $10

Ferroalloy Prices, Page 60

New York—Reductions have been announced on ferroalloys, effective Jan. 1 for next year. Ferromanganese, 78 to 82 per cent, will be $75 per gross ton, duty paid, on orders up to 1000 tons; $73.50 on lots ranging from 1000 up to 2000 tons; and $72 on 2000 tons or more. This is a reduction of $10 a ton. English ferromanganese producers have made corresponding reductions.

Domestic spiegeleisen, 19 to 21 per cent, has been reduced $3 a ton on lots up to 100 tons, to $27, duty paid. The revision is effective at once and applies on shipments extending through the first half of 1932. It is assumed British producers will make a corresponding revision from the present purely nominal price of $31.50, duty paid, on 26 to 28 per cent material.

Ferrosilicon, 50 per cent, will be $77.50 per gross ton in carlots, bulk; and $85 in less than carlots. Current prices are $83.50 and $88.50, respectively. The spot market will be $5 a ton higher on each price named for next year, it is indicated. Ferrosilicon, 75 per cent, contract, will be $126 per gross ton in carlots, bulk; and $136 for less than carlots, a reduction of $4 a ton in each instance. The spot market will be $10 a ton higher on each price. Freight is allowed on both grades, unitage pro rata. Ferrosilicon, 14 to 16 per cent, is unchanged at $31 per gross ton, furnace, on contracts.

A reduction of 1 cent per pound is announced for high-carbon ferrochrome. On Jan. 1 contracts on 60 to 70 per cent material, 4 to 6 per cent carbon, will be 10c per pound, contained, with the spot market also 10c per pound contained, in carlots; 10.50c will be quoted per pound, contained, in ton lots; and 10.75c per pound, contained, in less than ton lots.

Ferrochrome, 2 per cent carbon, maximum, will be unchanged at 17c

(*Concluded on Page* 68)

Scrap

Further Downward Adjustments in Prices but Steel Grades Are Unchanged—Buying Light

Chicago—Moderate inquiries for foundry grade scrap, covering shipment after the holidays, are noted in this market. A shortage in sawed rail ends has occurred. Further orders for steelmaking grades have been placed by the Gary melter at $8, Chicago switching district. This makes a total of about 10,000 tons sold to that melter during the last week, and substantiates the quotation of $8 for heavy melting steel which was named about three weeks ago. The leading independent is continuing its restrictions on scrap receipts and may not lift them for another week.

Boston—Scrap shipments are at a low ebb. Several New England melters who have taken small lots of various grades are out or about

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.50 to 8.50
Boston, dealers	4.50 to 5.00
Buffalo, No. 1	8.50
Buffalo, No. 2	7.00 to 7.50
Chicago	7.50 to 8.00
Cinci., deal.	7.25 to 7.75
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.50 to 5.00
E. Pa. del. mill	7.25 to 8.50
N. Y. deal. R. R.	5.50 to 6.00
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	8.00 to 8.20
Federal, Ill.	7.00 to 7.50
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	9.25 to 9.75

COMPRESSED SHEETS

Buffalo, dealers	7.00 to 7.50
Chi. (Factory)	6.00 to 6.50
Cleveland	7.00 to 7.25
Detroit, dealers	6.00 to 6.50
E. Pa. new mat.	7.00 to 8.00
Pittsburgh	9.75 to 10.25
Valleys	8.50 to 9.00

BUNDLED SHEETS

Buffalo	6.25 to 6.75
Cinci. deal.	6.75 to 7.25
Cleveland	6.00 to 6.50
Eastern Pa.	6.00 to 6.50
Pittsburgh	9.25 to 9.75
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.00 to 4.50
Detroit, dealers	3.75 to 4.25
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.00 to 11.00
Boston, dealers	4.50 to 4.75
Buffalo	11.25 to 11.75
Chicago (3 ft.)	8.75 to 9.25
Chicago (2 ft.)	9.75 to 10.25
Cinci., deal.	12.00 to 12.50
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	11.50 to 12.00

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, con.	4.50 to 5.00
Buffalo	8.25 to 8.75
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.00
N. Y., deal. mill	4.75 to 5.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	11.00 to 11.50
Chicago	9.00 to 9.50
Eastern Pa.	10.50 to 11.00
Pittsburgh	10.75 to 11.25
St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	8.25 to 8.75
St. Louis	7.50 to 8.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.00 to 12.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00 to 13.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts. sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	7.75 to 8.00
St. Louis	8.50 to 9.00

SHOVELING STEEL

Chicago	7.50 to 8.00
Cleveland	6.25 to 6.50
St. Louis	7.00 to 7.50

RAILROAD WROUGHT

Birmingham	7.00 to 7.25
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	8.75 to 9.00
Chicago, No. 1	7.25 to 7.85
Chicago, No. 2	7.50 to 8.00
Cinci., No. 2	7.25 to 7.75
Eastern Pa.	9.50
N. Y., No. 1, deal.	7.00 to 7.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	5.00 to 5.50
St. Louis, No. 2	7.00 to 7.50

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	9.50 to 10.00
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	7.00 to 7.50
Chicago, No. 1	5.50 to 6.00
Cinn., No. 1 dl.	5.50 to 6.00
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	5.75 to 6.00
Det., No. 1 new deal.	5.00 to 5.50
St. L., No. 1	6.00 to 6.50
Val. new No. 1	8.75 to 9.25

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	1.35 to 1.50
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.50
Cinn., deal.	3.75 to 4.25
Cleveland	5.00 to 5.50
Detroit	3.50 to 4.00
Eastern Pa.	5.00 to 5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.00 to 7.50
St. Louis	3.00 to 3.50
Valleys	6.75 to 7.25

BORINGS AND TURNINGS For Blast Furnace Use

Boston, dealers	1.30 to 1.50
Buffalo	6.50 to 7.00
Cinn., deal.	3.75 to 4.25
Cleveland	5.25 to 5.75
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	6.75 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	6.50 to 7.25
Boston, deal.	1.50 to 1.75
Buffalo	6.00 to 6.50
Chicago	3.50 to 4.00
Cinn., deal.	3.75 to 4.25
Cleveland	5.25 to 5.75
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.50
E. Pa., chem.	10.50 to 12.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	6.75 to 7.00
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	5.00 to 5.50
Eastern Pa.	7.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	6.75 to 7.00
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, del.	2.00 to 2.25
Chicago	10.50 to 11.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	8.50 to 9.00
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.50 to 8.00
Chi., steelworks	6.50 to 7.00
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh	9.25 to 9.75
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	12.00 to 12.50
Chicago	12.90 to 13.45
Eastern Pa.	15.50 to 16.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	8.40 to 8.95
N. Y., deal.	9.00 to 9.50
St. Louis	9.00 to 9.50
E. Penna.	15.00 to 15.50

CAR WHEELS

Birming. iron	8.00 to 9.00
Boston, iron	12.50 to 13.50
Buffalo, iron	10.00 to 10.50
Buffalo, steel	10.50 to 11.00
Chicago, iron	9.00 to 9.50
Chi. rolled steel	9.00 to 9.50
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	10.00 to 10.50
E. Pa. iron	11.00 to 11.50
Pitts. iron	10.00 to 10.50
Pitts., steel	10.75 to 11.25
St. Louis, iron	7.00 to 7.50
St. Louis, steel	7.50 to 8.00

NO. 1 CAST SCRAP

Birmingham	8.50 to 9.00
Buffalo (Mach.)	10.00 to 10.50
Boston, textile	7.00 to 8.50
Chicago, mach.	9.00 to 9.50
Chi., railroad	8.10 to 8.70
Chicago, agri.	7.60 to 8.10
Cinn., mach. cup., gross	11.00 to 11.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa., cupola	11.50
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	8.50 to 9.00
St. L., No. 1	7.50 to 8.00

HEAVY CAST

Boston	6.00 to 6.50
Bost. mach. cast	8.00 to 9.00
Buffalo, break	6.50 to 7.00
Cleve., break	6.00 to 6.50
Detroit, auto, net deal	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00 to 9.50
N. Y. break, dl.	5.75 to 6.00
N. Y. No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.75

MALLEABLE

Boston R. R.	11.50 to 12.00
Buffalo	9.75 to 10.25
Chicago, agri.	7.50 to 8.00
Chicago, R. R.	8.00 to 8.50
Cinci., R. R. del.	9.25 to 9.75
Cinci., agri. del.	9.00 to 9.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	6.00 to 6.50

RAILS FOR ROLLING 5 feet and over

Birmingham	10.00 to 10.50
Boston, deal.	6.00 to 7.00
Buffalo	9.75 to 10.25
Chicago	10.00 to 10.50
Eastern Pa.	11.50 to 12.00
New York	6.25 to 6.75
St. Louis	10.00 to 10.50

LOCOMOTIVE TIRES

Chicago, cut	10.50 to 11.00
St. L., No. 1	9.00 to 9.50

LOW PHOS. PUNCHINGS

Chicago	10.00 to 10.50
Buffalo	12.00 to 12.50
Eastern Pa.	13.00
Pittsburgh	11.00 to 11.50

A New Service for Steel Users

ILLINOIS SCULLY STEEL WAREHOUSE COMPANY

Subsidiary of United States Steel Corporation

A Consolidation of

Illinois Steel Warehouse Company
and
Scully Steel and Iron Company

Former management of the two companies will be retained in the new organization. All Chicago warehouse stock will be consolidated at 1319 Wabansia Avenue where additional warehouse space will accommodate a greater variety of light and heavy rolled steel products, specialties and machinery.

General Offices and Warehouse
1319 Wabansia Avenue
Chicago

Warehouses
Chicago · St. Paul · St. Louis

to go out of the market until after Jan. 1. Delivered prices at outside points bring the f.o.b. price here too low to interest.

New York—Scrap demand is light and the few small shipments being made are largely against contracts. Low prices, which are inclined to weakness, fail to attract interest. Most No. 1 steel continues to be bought for barge storage at $5.50. A little has gone to eastern Pennsylvania at slightly under $8, delivered.

Philadelphia—Steel and iron scrap remain dull and demand is practically absent. Melters of steelmaking grades are using little and have fair stocks. Stove plate and grate bars are now $7, delivered.

Buffalo—Bethlehem has purchased more than 1500 tons of No. 1 heavy melting steel for delivery at Lackawanna, at its offer of $8.50. This now appears to be a solidly established price for this material, with the usual $1.50 differential for No. 2 heavy melting steel and other materials of equal grade. Dealers, discouraged by the continued drop in prices and scarcity of supplies which can be delivered profitably at going levels, have almost completely suspended operations in some instances.

Pittsburgh—Scrap buying by mills is almost entirely lacking and a suspension of shipments to one mill has had an additional quieting effect. Consumers are endeavoring to hold stocks at a minimum over the remainder of the year and little improvement in orders is looked for until January. Prices are partly nominal but generally unchanged. Heavy melting steel continues $10 to $10.50, with compressed sheets holding around $10. Blast furnace grades are dull and slightly easier.

Cleveland—Shipments of steel and iron scrap continue to decline in volume and no new buying is being done. The same situation obtains in the Valleys. Prices are unchanged from lack of trading, and are nominal.

Detroit—No. 1 heavy melting, auto malleable, both cast grades, cast and short turnings and borings have been reduced 25 cents a ton with the exception of new heavy auto cast and auto malleable which are down 50 cents on the spread. Short and long steel rails have also been cut. Blast furnace grades are particularly soft with open-hearth grades also off due largely to lack of buying.

Cincinnati — Further restrictions on shipments of iron and steel scrap have been made, further curtailing the light movement. Quotations are without test, small transactions showing almost all grades are nominal. The Norfolk & Western, and the Southern railroads are offering the usual scrap lists, but none is expected this month from the Louisville & Nashville railroad.

St. Louis—Seasonal dullness prevails in iron and steel scrap, somewhat more pronounced, however, than in past years. Sales since Dec. 1 have been in small volume, consisting of a few scattering cars of special material for prompt delivery. No inquiry for first quarter of 1932 has appeared.

Birmingham, Ala.—No improvement is noted in steel and iron scrap. No contracts for delivery next year have been mentioned.

Toronto, Ont.—Business in old material is spotty. Steel scrap is moving slowly, with only small tonnages of heavy melting steel or turnings going to consumers. No inquiries have appeared for future delivery and there is no indication that consumers are considering placing contracts against future needs. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Low on Airway Towers

Washington — Missouri Rolling Mill Co., St. Louis, is low on 18 galvanized steel 75-foot skeleton towers for the department of commerce at $155 each. Towers require 4500 pounds of steel each and are for the Fort Worth-Louisville airway. On 30 auxiliary platforms, American Bridge Co. is low at $20 each.

Monterrey Iron & Steel Works, Monterrey, Mexico, was operating at 25 per cent of capacity at the end of September. Pig iron stocks were sufficient for a year's operations of the steel works at present production rate.

Coke

Furnace and Foundry Requirements Moderate—Domestic Sales Larger

COKE PRICES, PAGE 60

Pittsburgh—Beehive coke demand for domestic heating and water gas production is slightly more active but foundries are restricting purchases. Blast furnace consumption is at a low ebb, although one eastern merchant stack is scheduled to go in blast this month and will use beehive coke. The spot market continues $2.35 to $2.40 for furnace coke, and $3.25 to $4.50 for the foundry grade.

New York—Until inventory is past little improvement is expected in the coke market. Meanwhile, with a further reduction in output, beehive furnace coke prices are steady at $2.25 to $2.50, Connellsville, and standard beehive foundry coke, $3.25 to $3.50, Connellsville. Premium brands of foundry coke are $4.50, Latrobe, Pa. By-product foundry coke is unchanged at $8.70 to $9.10, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Specifications for by-product foundry coke are tapering in anticipation of the inventory period. The price continues $9, delivered, Cincinnati.

Chicago—Weakness to the extent of 50 cents a ton is noted in the $7.50 oven price for by-product foundry coke. Shipments are not far behind November.

St. Louis—More than the usual seasonal slowing in requirements for metallurgical coke is noted in this district. Foundries and mills have not increased schedules, and have stocks sufficient for some time. Quotations are steady, but are not being tested.

Birmingham, Ala.—Few contracts are being closed for delivery next year. Woodward Iron Co., Woodward, Ala., will bank its by-product ovens, planning to blow out its two active blast furnaces. Domestic coke demand is more active.

Pacific Coast

Current Buying Unusually Light—Public Projects Furnish Only Activity — Prospective Building Will Require Some Moderate Tonnages—Pipe Requirements Shaping Up for 1932

Seattle—Conditions in the Pacific Northwest are unchanged, practically all projects under way being federal and state. Private initiative is handicapped by lack of financial support. However, much development work is planned for action as soon as funds can be obtained.

Awards were of small proportions this week but some tonnages of fair size are up for early consideration. These include 2000 tons for the Portland postoffice, 350 tons of plates for a steel pipe job in Seattle, 500 tons for a county bridge near Seattle and 1000 tons of steel pipe for Brighouse, B. C.

Bars, Plates and Shapes

Demand for both merchant and reinforcing bars is small. No projects of size are pending and recent turnover has been in small lots. No immediate improvement is in prospect.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Puget Sound navy yard is in the market for three tons of various specifications. Idaho received bids on a 11-mile road project involving a small tonnage of concrete bars and considerable corrugated pipe, 24 to 48 inches. Northwest Bolt & Nut Co., Seattle, has booked 110 tons of cable guard rail fittings for the Washington highway department. This plant, which has been operating steadily eight hours a day, is also furnishing similar material for Idaho, 45 tons of rivets for the Seattle postoffice and West Seattle reservoir and 60 tons of pipe bands for a wood pipe project.

Seattle will open bids Dec. 11 for furnishing 6400 feet of $\frac{5}{16}$-inch gage, 24 and 36-inch steel pipe for an overflow pipe line. About 350 tons of steel are involved. Alternate bids for concrete will be received.

Murch Bros., St. Louis, have the contract for the Portland postoffice at $1,156,000. Local fabricators are interested in a sub-contract for 2000 tons of shapes. Western Bridge Co. Ltd., Vancouver, B. C., has the contract to supply an unstated tonnage of structurals for a $150,000 addition to Woodwards' Ltd. department store, Vancouver. Local shops are fairly well supplied with work but not a great deal of new construction is up for figures.

Finished Materials

While November turnover about equaled that of October with local wholesale jobbing houses, business is slack at the moment and December is expected to make a poor showing. The buying public is postponing orders as long as possible and purchasing only small tonnages for immediate requirements. New sheet prices initiated by Seattle houses are holding fairly firm but in Portland territory all prices are open and conditions are far from satisfactory. No item is in particular demand although some small lots of plate steel have recently been sold in eastern Washington. Mill buying is at a minimum.

Steel Founders Hold to A. S. T. M. Code for Railroads

(*Concluded from Page* 19)

posium. Mr. Rogers also announced that the annual meeting of the society will be held in the Stevens hotel, Chicago, Jan. 20 and 21.

J. G. Ritter, welding and foundry engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in a paper "The Use of Steel Castings in Welded Structures," touched on certain phases of the competition between steel castings and welded steel products. Mr. Ritter believes that through the presentation of proper information on steel casting design, a substantial part of the tonnage formerly made in cast steel and now being welded, will be returned to the castings shop. Some tonnage will come back to the foundry through the combination of steel castings in welded structures.

Welding Has Place

Further development of alloy cast steel, according to Mr. Ritter, will be an added incentive for the use of steel castings. However, welding has a field without any doubt and the speaker cited several advantages of welded structures, including a saving in weight, which in some cases has permitted the product of his company to be assembled at the plant rather than in the field.

While the majority of members present, in reporting on the business situation, anticipate little improvement during the early part of the first quarter of 1932, several were rather optimistic regarding an increased demand for steel castings.

One member, who recently made an extended trip through the New England states, reported the development of a number of new machines which will undoubtedly make considerable equipment now used by the textile industry obsolete. Several members reported substantial increase in inquiries and one large manufacturer of equipment reported a larger number of inquiries during the past few weeks than in the previous five months.

A combined meeting of the large and small castings divisions was held in the afternoon, with T. H. Harvey, Ohio Steel Foundry Co., Lima, O., presiding.

Ferroalloy Prices Down

(*Continued from Page* 62)

on contracts, and 17.50c for spot. Maximum 0.20 per cent carbon will be quoted down ½-cent to 21.50c on contracts, and 22.50c on spot. Maximum 0.10 per cent carbon will be 23.50c on contracts, and 25.00c on spot. Freight will be allowed in all instances.

A 10-cent reduction is made in ferrovanadium, with 30 to 40 per cent holding at $3.05 to $3.30 per pound contained, on analysis, Alsifer will be marked down ½-cent to 9.50c a pound in carlots, f.o.b. Niagara Falls; 10.50c on ton lots, and 11.50c in less than ton lots, all on contract basis.

No changes have been announced on several of the other more important alloys, including silicomanganese, ferromolybdenum, ferrophosphorus and silicospiegel. Whether present prices will hold has not been definitely decided.

Pittsburgh—Contracting for next year is quiet, but with new prices announced it is expected to be more active soon. Ferromanganese is quoted $79.89, delivered, for lots up to 1000 tons on new contracts. Specifications against old contracts continue quiet.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	.58	44½	⅛	.23	5
¼	.62	50½	¾	.28	11
¾	.64	52½	1—1¼	.31	15
1—3			1½—2	.35	18

LAP WELD

⅜	.57	45½	2	.23	9
2½—6	.61	49½	2½—3½	.28	13
7—8	.58	45½	4—6	.30	17
9—10	.56	43½	7—8	.29	16
11—12	.55	42½	9—12	.26	11

BUTT WELD

Extra strong, plain ends

⅛	.55	44½	¼ & ⅜	+13	+48
¼	.60	49½	½	.23	7
1—1½	.62	51½	¾	.28	12
2—3	.63	52½	1—2	.34	18

LAP WELD

Extra strong, plain ends

⅜	.55	44½	2	.29	13
2½—4	.59	48½	2½—4	.34	20
4½—6	.58	47½	4½—6	.33	19
7—8	.54	41½	7—8	.31	17
9—10	.47	34½	9—12	.21	8
11—12	.46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$33.00 to 35.00
Four-inch, Birmingham	37.00 to 39.00
Four-inch, Chicago	43.00 to 45.00
Six to 24-inch, Chicago	40.00 to 42.00
Six-inch and over, N. Y.	28.00 to 30.00
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher Class A pipe $4 higher than Class B

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.50c
Los Ang. lcl.	2.80c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	2.50c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.60c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	3.50c
Phila.*† (e)	3.05c
Pitts.**	3.00c to 3.10c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	4.25c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	3.90c
Portland	4.50c
San Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

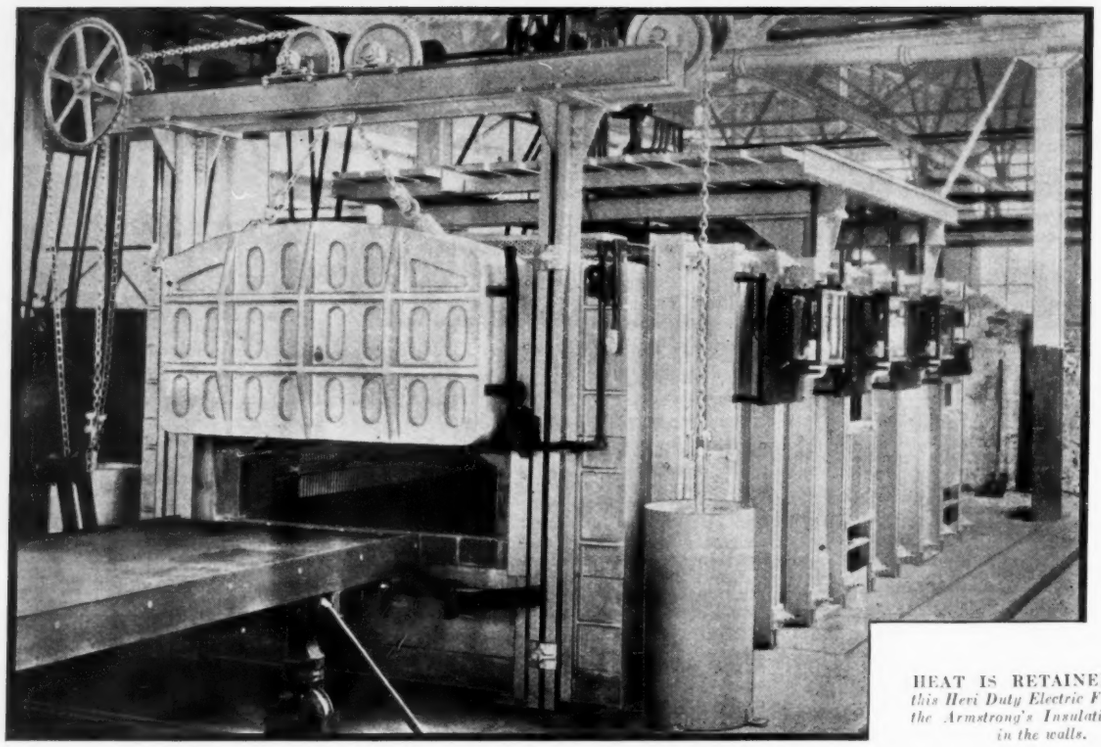
Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa where 5.14c is quoted (a) Rounds, hex. only

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff
(e) New mill classif.
‡Domestic bars.
*Plus quantity extras
**Less than 25 sheets.
*750 or more bundles



HEAT IS RETAINED *inside this Hevi Duty Electric Furnace by the Armstrong's Insulating Brick in the walls.*

Costly heat is well guarded in HEVI DUTY ELECTRIC FURNACES

EVEN, closely controlled heat is especially important in the process industries where careful control of temperatures is demanded to insure quality.

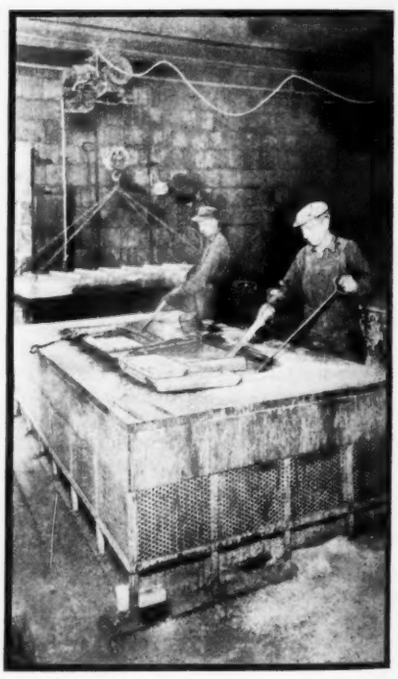
Highly efficient insulation is needed to reduce heat loss through the walls of the furnace. So the Hevi Duty Electric Company, of Milwaukee, depends on Armstrong's Insulating Brick to confine B. t. u.'s inside the Hevi Duty Furnace. Shown on this page.

Armstrong's Insulating Brick are particularly adapted by their construction to help save heat. They are burned at Cone 14, which guarantees that they will serve efficiently at a heat of over 2500° F. in actual service. And because they are machine-sized, they lay up tighter and more efficiently.

Companion to Armstrong's Brick are Nonpareil Insulating Brick. They are made for temperatures up to 1600° F. (In both cases, the temperatures are behind the refractory.) Nonpareil are also machine-sized, accurate to within .004".

Armstrong engineers will gladly tell you more about these two insulating brick, and cooperate with you in planning high temperature installations. Ask for samples of either brick for your own test. Armstrong Cork & Insulation Co., 920 Concord St., Lancaster, Pa.; Canadian offices in Montreal, Toronto, and Winnipeg.

Armstrong's (A) *Product*



CONTROLLED HEAT, *without waste, fits these Hevi Duty Electric Furnaces for any type of work.*

Armstrong's and Nonpareil Insulating Brick

for Furnaces, Ovens, Kilns, and Lehrs

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.75c, Conn., for copper

Sheets	
Yellow brass (high)	12.87½
Copper, hot rolled	15.87½
Lead sheets, to jobbers	7.00
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	16.12½
Seamless copper	15.37½
Rods	
Yellow brass (high, full turnings)	10.62½
Naval brass	11.75
Anodes	
Copper untrimmed	13.37½
Wire	
Yellow brass (high)	12.87½

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.75 to 4.00
Chicago	3.50 to 3.75
Cleveland	3.75 to 4.00
St. Louis	3.50
Heavy Yellow Brass	
New York	2.25 to 2.50
Heavy Copper and Wire	
New York	4.75 to 5.00
Boston	5.00 to 5.25
Chicago	3.75 to 4.25
Cleveland	3.75 to 4.25
St. Louis	3.75
Composition Brass Borings	
New York	3.50 to 3.75
Yellow Brass Tubing	
Cleveland	2.25 to 2.75
Light Copper	
New York	3.75 to 4.00
Chicago	3.50 to 3.75
Cleveland	3.25 to 3.50
St. Louis	3.50
Light Brass	
Boston	1.75 to 2.00
Chicago	2.00 to 2.25
Cleveland	1.25 to 1.75
St. Louis	2.00
Zinc	
New York	1.00 to 1.25
Cleveland	1.00 to 1.25
St. Louis	1.50
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	7.50 to 8.50
Borings, Cleveland	3.00 to 3.25
Mixed cast, Cleveland	3.75 to 4.25
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt aluminum No. 12'	8.50 to 9.50
Brass ingots, 85-5-5-5	6.87½

Metals

Quotations Fairly Steady but Purchasing Continues at Slow Pace—Zinc Firms Up

New York—Metal quotations held steady during the past week with the exception of tin which eased off to the lowest levels since 1899 due to the decline in the exchange on pound sterling.

Copper — The metal continued available through the week at 6.50c, Connecticut, from custom smelters. Mine producers continued to hold to the 6.75c price. Domestic demand was quiet. Export business also was light at the official quotation of 7.00c, c.i.f. European ports. Copper stocks are estimated to have increased more than 20,000 tons last month, which follows a gain of about 18,000 tons in October.

Lead—Demand has been relatively better in the Mid-West than in the East. Most classes of consumers have been represented in the market although purchasing has been light and usually for early delivery. Quotations held last week at 3.65c, East St. Louis, and 3.85c, New York.

Zinc—Quotations advanced slightly last week with producers asking 3.17½c, East St. Louis, for December delivery. A premium was asked for delivery ahead. Publication of statistics last week which showed only a slight gain in stocks gave evidence that producers are keeping production closely in line with current slow demand.

Tin—Prices again eased off slightly last week with the average level at the lowest point in more than three decades. Domestic prices reflected easiness in sterling exchange and to a certain extent slow domestic demand. Consumers in this country have been participating only slightly in the market.

Antimony—The market continued dull last week with prices little more than nominal and unchanged. Imports of Chinese antimony fell off sharply last month.

Aluminum — Quotations remain steady but no improvement has been noted in buying.

Silver—Domestic prices have held closely to recent levels. Friday the metal was quoted 30.12½c an ounce.

Distillate Prices Likely To Hold for Early 1932

New York—No immediate changes in distillate prices are contemplated by leading distributors, early 1932 business likely to be based on current quotations. Most distributors, however, are reluctant to contract, in view of the general firmness of the market. Demand is not heavy, but production continues light. Some are refusing additional business in toluol. Contracting in naphthalene is increasing gradually. Phenol is steady with a fair demand. Sulphate of ammonia is not active, but domestic prices are steadier.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver Prices Steady

New York—Quicksilver prices are steady at $68 to $70 a virgin flask of 76 ounces. Current demand is mainly small and for quick delivery. Some lots of 25 flasks have been sold at $68, while the higher prices are applying on smaller orders. Some sellers quote $67 a flask on orders for more than 25 flasks.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
December 5	6.50	6.87½	6.25	20.75	21.12½	3.85	3.65	3.15	22.90	6.25	35.00
December 7	6.50	6.87½	6.25	20.50	21.00	3.85	3.65	3.17½	22.90	6.25	35.00
December 8	6.50	6.87½	6.25	20.62½	21.12½	3.85	3.65	3.17½	22.90	6.25	35.00
December 9	6.50	6.87½	6.25	20.62½	21.00	3.85	3.65	3.17½	22.90	6.25	35.00
December 10	6.50	6.87½	6.25	20.50	21.00	3.85	3.65	3.17½	22.90	6.25	35.00
December 11	6.50	6.87½	6.25	20.87½	21.32½	3.65	3.65	3.17½	22.90	6.25	35.00

Europe

Unsettled Conditions Hold Back Steel Demand—Railroad Buying Helps Inactive Market

London—(*By Cable*) — Uncertainty prevails in the iron and steel market, due to a number of causes. A contract for 105,000 steel sleepers for the Great Western railroad is expected to be placed shortly. An order has been received from Chinese railroads for several 40-ton trucks, some passenger cars and a large tonnage of steel sleepers.

Pig iron and steel are dull. South Wales steelmakers are concerned over large imports of tin plate bars but makers of tin plate urge no tariff. Galvanized sheets and tin plate are weak. Shipbuilding is improving. Exports of Middlesbrough pig iron in November were 7834 tons.

Advices from the Continent report the international wire rod syndicate has been extended for five years and an international wire products export syndicate formed. Markets generally are weak and inactive.

German Steel Trade Is Shrinking; Losses General

Berlin—The situation on the German iron and steel market remains unsatisfactory. Consumers are reluctant, owing to lack of confidence and shortage of funds, which is also true with regard to the states and municipalities. So long as the political situation remains unsettled, it cannot be expected that business will recover. Owing to this state of affairs, about 75 per cent of the sales of the German steelmasters now correspond to foreign business in a direct or indirect way. Indirect sales mean sales at cheap quotations to the manufacturers of steel products who get an export rebate from the producers.

Producers claim they are no longer in a position to pay these high rebates, as their average income is thus seriously reduced. Although this policy can be understood from the producers' point of view, it must be mentioned that the steelmasters themselves would suffer most if the manufacturers were not in a position to continue their exports with the aid of the rebates. The production of merchant bars has now declined to 36 per cent of capacity, that of A-products to 45 per cent, that of plates to 28 per cent, and that of thin sheets to 41 per cent.

Profits Adversely Affected

These unsatisfactory conditions have obtained during the greater part of the year, and it is not surprising to see from annual reports of the larger steel concerns, now gradually being released, that the results make a very unfavorable showing. The first of these reports was that of the Klockner works, the profits of which for the year ending June 30, 1930, were reduced from 6,400,000 marks to 4,950,000 marks, this result being made possible only by reducing the deductions from 10,356,000 marks to 3,922,000 marks during the year ended June 30, 1931. No dividend has been paid this time, whereas 6 per cent was paid for the preceding year. Last year the pig iron production of the Klockner works was reduced from 627,657 metric tons to 373,184 tons, the output of finished products at the same time falling from 755,795 tons to 535,210 tons.

Competition Hits Export Sales

Sales on export markets are suffering as a result of British competition. Increased shipments to England in anticipation of a raising of the import duty in that country have come to a standstill. Apart from Russian orders, which are now mainly executed, unfilled orders for export purposes are by more than 60 per cent smaller than at the beginning of the year. Raw steel production declined to 590,000 metric tons in September.

Pig iron production in October remained almost unchanged with 434,211 metric tons, compared with 687,497 tons a year before. Negotiations for a prolongation of the German pig iron cartel, which terminates at the end of the year, are progressing satisfactorily, and no difficulties are expected.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Dec. 10

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d to £ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$ 9.68	2 18 6	$10.45 to $11.18	2 3 0 to 2 6 0
Basic bessemer	9.27	2 16 0*	9.72 to 10.21	2 0 0 to 2 2 0
Hematite, Phos. .03-.05	10.76	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$17.79	5 7 6	$12.39 to $12.64	2 11 0 to 2 12 0
Wire rods, No. 5 gage	28.14	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$27.31	8 5 0	$28.55	5 17 6
Merchant bars	1.04c	7 0 0	.62c to .63c	2 16 0 to 2 17 0
Structural shapes	1.15c	7 15 0	.61c to .62c	2 15 0 to 2 16 0
Plates, †¼-in. or 5mm	1.22c	8 5 0	.76c to .77c	3 9 0 to 3 10 0
Sheets, black, 24 gage or 0.5 mm.	1.30c	8 15 0	1.51c to 1.54c	6 17 6 to 7 0 0
Sheets, gal., 24 gage, corr.	1.33c	9 0 0	1.76c to 1.79c	8 0 0 to 8 2 6
Bands and strips	1.41c	9 10 0	.83c	3 15 0
Plain wire, base	1.26c	8 10 0	1.16c	5 5 0
Galvanized wire, base	1.63c	11 0 0	1.36c	6 3 9
Wire nails, base	1.63c	11 0 0	1.17c	5 6 3
Tin plate, box 108 lbs.	$ 2.36	0 14 3	$3.20	0 13 2‡

British ferromanganese $80 to $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Renten Marks
Fdy. pig iron, Si. 2.5	$ 9.68	2 18 6	$10.05	255(2)	$11.16	400	$18.49	78
Basic bessemer pig iron	9.27	2 16 0*	.....	.....	10.46	375	20.26	85.50
Furnace coke	2.07	0 12 6	5.71	145	4.46	160	5.07	21.40
Billets	17.79	5 7 6	16.55	420	14.09	505	26.19	110.50
Standard rails	1.22c	8 5 0	1.41c	785	1.57c	1,210	1.36c	127
Merchant bars	1.04c	7 0 0	.90c	500	.70c	535	1.37c	128
Structural shapes	1.30c	8 15 0	.99c	550	.69c	530	1.34c	125
Plates, †¼-in. or 5mm.	1.40c	9 9 0	1.17c	650	.85c	655	1.65c	154.50
Sheets, black, 24 ga. or 0.5mm.	1.30c	8 15 0	1.84c	1,020	1.73c	1,330	2.73c	255
Sheets, galv., corr., 24 ga. or 0.5mm	1.37c	9 5 0	2.39c	1,325	1.95c	1,500	4.39c	410
Plain wire	1.26c	8 10 0	1.68c	935	1.95c	1,500	2.21c	207
Bands and strips	1.41c	9 10 0	1.13c	625	.92c	710	1.58c	148

*Basic. †British ship-plates, Continental bridge plates. ‡German.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

8 Years' Satisfaction
with
REVERE BRASS FORGINGS

Drain outlets and connections, caps, hubs and packing nuts . . . these parts, and more, go into the manufacture of washing machines. For some of these parts, great strength is the chief requirement, for others finish is the important thing. In all of them, low cost is essential.

Revere Brass Forgings meet each and all of these specifications.

Revere Brass Forgings are exceptionally STRONG because they are twice wrought, once in extrusion and again in forging.

With minimum effort Revere Brass Forgings TAKE A HIGH POLISH, the reason being the close grain of the metal and the smoothness of surface obtained from contact with the highly finished dies.

Parts made from Revere Brass Forgings ARE LOW IN FINAL COST. This results naturally from savings in material, machining and finishing costs. In addition, there is less scrap due to more accurate dimensions. Also, tools are not dulled in machining the forgings due to the close grain and free cutting quality of the metal.

To all this, a prominent washing machine manufacturer testifies as follows: "We have used Revere Brass Forgings for the past eight years with great satisfaction. We find that forgings have a great advantage over sand castings both in quality and price. We also find that forgings are much better and count a great deal in the process of finishing, and upon completion they are very superior to sand castings."

In your own plant, there may be production problems which can be solved by Revere Brass Forgings. Revere offers you the services of its research and technical staff to develop forgings to meet your particular needs so that you can duplicate the satisfaction and savings obtained by the manufacturer mentioned.

For further information address Revere Copper and Brass Incorporated, 230 Park Ave., New York City.

Revere Copper *and* Brass
INCORPORATED

Revere COPPER BRASS Products

Baltimore *Division, Baltimore, Md.* Michigan *Division, Detroit, Mich.* Higgins *Division, Detroit, Mich.*
Dallas *Division, Chicago, Ill.* Taunton-New Bedford *Division, Taunton, Mass.* Rome *Division, Rome, N. Y.*

EXECUTIVE OFFICES: NEW YORK CITY
GENERAL OFFICES: ROME, N. Y.

Machinery

DECEMBER is apt to be a poor month in the machine tool business in the best of times. Naturally, not much has been expected of it this year. All things considered, however, it is turning out thus far to be somewhat better than was anticipated. Reports this week range all the way from "no orders" to some of decidedly substantial size which directly or indirectly have emanated from the automotive industry. Small tools are not moving well just at this time. Government departments continue to take a number of machines and bids for more soon will be opened. Russian prospects are so poor that they are not even mentioned.

New York—While a few machine tool dealers and builders note slight gains in inquiries and orders, demand for new equipment in general is light and unchanged. No large lists are up, although one industrial inquiry covers ten miscellaneous tools. Unfilled orders with some builders are heavier, largely in the case of those who shared in the subway repair shop business. Some of these tools are being made in the middle west.

Ball bearing shops in Connecticut generally are holding gains in production schedules attained several weeks ago and with one exception are operating on an average of 40 hours. In several instances this is due to heavier releases from automobile manufacturers.

Navy bureau, division of supplies and accounts, will close bids on Jan. 5 on the following machine tools: For New York or San Francisco, one crank shaper and one motor-driven shaper; for Puget Sound, three radial drills; for Philadelphia, one power press brake, one heavy duty shaper and one face grinder; for Puget Sound, one heavy duty vertical milling machine; and for Washington, one bolt threading machine.

Bids close Dec. 18 on four milling machines for Wright Field, O., cir. 241, and Dec. 21 on two .45 calibre cartridge case piercing, priming and mouth varnishing machines for the Frankford Arsenal, Pa.

Worcester, Mass.—Little activity is apparent in the machinery market. Domestic inquiry is more spotty than ever, especially in lathes, but there are some scattering inquiries for grinders in single units. It is not new inquiry, however, but old inquiry revived as the need for a machine here and there becomes pressing.

Manufacturers are looking for little in the way of bookings for the next several weeks. Yearly 1931 equipment appropriations in most cases already are exhausted or nearly exhausted, thereby precluding further expenditures this year.

In some quarters optimism is shown by expressions of belief that 1932 will open with more promise than did 1931. New England buyers have been withholding purchases for several months. The theory is that when the need for new machines can no longer be staved off, demand will appear in unexpected volume. That is the hope for 1932.

Pittsburgh—Machine tool activity has declined, following a recent spurt in inquiry. A fair volume of work is pending as the result of this inquiry, but awards are quiet and unchanged.

In a number of cases users are awaiting a definite turn in business before placing orders. Sellers look for little change in demand over the balance of the month.

Cleveland—Generally speaking, expectations for December as an inactive month are being fulfilled, particularly as far as small tools are concerned. The automotive industry continues to be the backbone of the market—either directly or indirectly—work still being underway on old orders and some new business recently having been placed.

One of the substantial orders originating in this territory covers a battery of presses to be installed in a tire plant in this district for use in pressing heavy solid rubber truck tires on wheel rims. This business is reported to have been placed with an eastern builder.

Development work is being actively continued by machine tool builders here and announcements of new machines and accessories are expected soon after the first of the year.

Chicago—Machine tool distributors find less shopping around as the end of the year approaches. In all probability, practically all negotiations for new equipment will be suspended about Dec. 15, until after the holidays.

War department is placing about $6000 worth of equipment in this market for a Mississippi river barge. An excavating equipment manufacturer in the Milwaukee area is reviving an inquiry that was before the market early this year. This company usually places its equipment during the first quarter. Northern Pacific railroad is expected to buy a radial drill shortly. Illinois department of welfare is inquiring for a small amount of equipment for a state hospital at Mantino, Ill.

Reports are heard to the effect that Chicago board of education will eliminate all purchases of manual training equipment for schools during next year. Used tool sales again have slowed down.

Norton President Honored On Fiftieth Anniversary

Worcester, Mass.—Charles L. Allen, president of the Norton Co., and general manager of that company from its inception, recently was honored at a dinner in observance of the 50th anniversary of his assumption of leadership in the abrasive industry. President Hoover sent a telegram of congratulation and former president Calvin Coolidge, in a letter, recalled Mr. Allen's work on the St. Lawrence waterways commission. King Gustav V of Sweden, through Olof H. Lamm, consul general, bestowed on Mr. Allen the honor of Knight of the First Class of The Order of Vasa.

Aldus C. Higgins, treasurer, Norton Co. was toastmaster. Speakers were William LaCoste Neilson, vice president in charge of sales, Hugo W. H. Beth, works manager, grinding wheel division, Howard W. Dunbar, works manager, grinding machine division, and Lewis E. Saunders, manager of research. George N. Jeppson, vice president in charge of production, and secretary of the company, presented to Mr. Allen a silver tray and inkwell.

Purchasing Agents Organize

Erie, Pa.—Purchasing agents here are organizing a buyers' association, to begin functioning early next year. Among the promoters are F. L. Walker, Erie Foundry Co.; A. E. Koch, Odin Stove Mfg. Co.; A. J. Woodbridge, Skinner Engine Co.; W. C. Culbertson, Erie Malleable Iron Co.; A. J. Becker, Bucyrus-Erie Co.; M. M. Wallace, Erie City Iron Works; C. E. Portiner, Griswold Mfg. Co.; and John W. Cooke, Standard Stoker Co.

All WIRE ROPE

. . . has grave responsibilities

Wire rope *must* be a quality product; for in practically every wire rope installation, human life, property and money are in constant jeopardy. It is to guard against such damages that Wickwire Spencer Wire Rope Engineers are stern dictators of the methods and materials employed in rope manufacture. It is to insure the confidence of the user that they make exhaustive chemical, physical and micro-photographic tests of every wire that goes into every Wickwire Spencer Wire Rope. Samples of finished rope are taken at regular and frequent intervals, and torn asunder in gigantic testing machines, to prove the strength and quality beyond a shadow of a doubt. This fidelity in manufacture and testing produces wire rope that not only equals but exceeds the requirements of usual standards, and adds a durability that makes Wickwire Spencer Wire Rope an economical rope to use.

Wickwire Spencer Steel Company
41 East 42nd Street, New York City; Buffalo; Chicago; Detroit; Cleveland; Philadelphia; Worcester; Tulsa, 314 E. Archer Street; Pacific Coast Headquarters: San Francisco; Branches and Warehouses: Los Angeles, Portland, Seattle. Export Sales Department, New York City

WICKWIRE SPENCER *Wire Rope*

Send for our book. It is free and will prove of great value.

New Gray Iron Business Gains; Output Is Down

(*Concluded from Page* 21)

and unfilled orders were improved.

One hundred and twenty-six foundries reported a new business increase from 37.9 per cent normal in September to 39.6 in October, and unfilled orders from 29.4 in September to 29.7 in October. Production, however, dropped from 49.4 in September to 47.6 in October. "Normal" in all cases is the average of months for the past three calendar years.

Business outlook is considered good by three foundries, fair by 37, poor by 49 and bad by 37.

Increased activity was reported in the Ohio, Pennsylvania, Michigan and Indiana areas while the New England and Canadian district remained at the September level. Decreased activity was reported in the rest of the country.

Babbitt Metal Output Is Best Since June

For the ten months of 1931, August has been the low in total production of babbitt metal, with the October tabulation improved over September and at the best level since June. Increase was largely in the metal produced by establishments for their own use, according to the department of commerce:

In Pounds

1930	(a) Total production	(b) Sales	(c) Production for own use
Oct.	3,101,187	2,068,544	1,032,643
10 mo.	37,951,312	27,904,803	10,047,009
Nov.	2,695,087	1,904,256	790,831
Dec.	2,106,522	1,459,208	647,314
Year	42,752,921	31,267,767	11,485,154
1931			
Jan.	2,855,693	2,089,574	766,119
Feb.	2,507,222	1,819,749	687,473
March	2,661,211	1,829,477	831,734
April	2,560,243	1,844,311	715,932
May	2,408,781	1,678,204	730,577
June	2,306,940	1,605,009	701,931
July	1,931,685	1,420,265	511,420
Aug.	1,780,900	1,376,692	404,208
Sept.	1,851,956	1,355,415	496,541
Oct.	2,047,100	1,495,185	551,915
10 mo.	22,911,731	16,513,881	6,397,850

(a) By 43 plants. (b) By 33 manufacturers who produce for sale, including 5 who also report consumption of own metal. (c) By 15 establishments which manufacture their own metal, including 5 which also produce for sale.

Coal Stocks Increase

Stocks of bituminous and anthracite coal in industrial consumers' hands Nov. 1 in the United States and Canada totaled 33,250,000 net tons, or 41 days' supply, states the National Association of Purchasing Agents. This was an increase of 500,000 tons in a month. By-product coke plants had a 50-day supply, steel mills 50, railroads 23.

Steel Furniture Orders Up After Six-Month Decline

October's orders for steel furniture not only checked the six-month consecutive drop prior but also showed an encouraging gain over September. Shipments were off slightly, however. Both orders and shipments in the shelving classification remained steady at September's rate, as department of commerce reports show:

(In Dollars, 000 Omitted)

1930	Business Group New orders	Business Group Shipments	Shelving New orders	Shelving Shipments
Oct.	1,833	1,902	587	645
10 mo.	21,019	22,022	7,314	7,356
Nov.	1,587	1,632	468	502
Dec.	1,591	1,774	283	515
Year	24,198	25,429	8,065	8,374
1931				
Jan.	1,840	1,768	417	422
Feb.	1,478	1,563	401	382
March	1,487	1,522	455	481
April	1,424	1,481	408	423
May	1,306	1,305	506	409
June	1,272	1,221	452	449
July	1,092	1,074	328	371
Aug.*	1,010	1,057	307	358
Sept.*	1,059	1,188	304	310
Oct.**	1,113	1,078	304	310
10 mo.	13,082	13,256	3,884	3,915

*Revised. **Preliminary.

Mechanical Stoker Sales Lower in October

Though sales of mechanical stokers were lower in October, at 83 units they were above the average of sales during the first five months of 1931. October's loss from September was chiefly in those stokers installed under fire-tube boilers. Department of commerce figures follow:

1930	Stokers sold	Fire tube boilers	Water tube boilers
October	92	46	46
10 mo.	1,055	513	542
November	71	41	30
December	53	35	18
Year	1,179	589	590
1931			
January	85	40	45
February	66	37	29
March	63	27	36
April	65	32	33
May	80	29	51
June	111	55	56
July	101	58	43
August	132	59	73
September	96	56	40
October	83	47	36
10 mo.	882	440	442

Enameled Ware Shipments Lose, September Gain

Shipments of enameled sheet metal ware lost all September's encouraging gain when in October they receded to 255,782 dozens. Loss was chiefly in the gray classification, although declines were registered in white and colored classes also, according to the department of commerce.

In Dozens

1930	Total	White	Gray and Colored
Oct.	329,337	107,553	221,784
10 mo.	3,012,366	1,050,351	1,962,015
Nov.	263,365	79,719	183,646
Dec.	250,568	70,554	180,014
Year	3,526,299	1,200,624	2,325,675
1931			
Jan.	267,232	84,917	182,315
Feb.	289,205	96,812	192,393
March	312,916	103,375	209,541
April	281,339	99,218	182,121
May	264,953	106,091	158,862
June	232,672	81,588	151,084
July	246,858	83,483	163,375
Aug.	251,544	90,546	160,998
Sept.	307,068	97,635	209,433
Oct.	255,782	81,866	173,916
10 mo.	2,709,569	925,531	1,784,038

Here and There in Industry

(*Concluded from Page* 24)

poration. No change is contemplated in the other plants with exception that a small force of the engineering and sales departments of the other companies will be added to the St. Louis administrative staff.

□ □ □

Victor Saw Works Inc., Middletown, N. Y., celebrating its twenty-fifth anniversary, has introduced a molybdenum heavy duty hack saw for which it claims efficient service at low cost.

□ □ □

Shenango-Penn Mold Co., Dover, O., represented at Philadelphia by the Adair-Day Corp., has moved its Philadelphia sales offices from 1023 Widener building to 1018 Girard Trust Co. building.

□ □ □

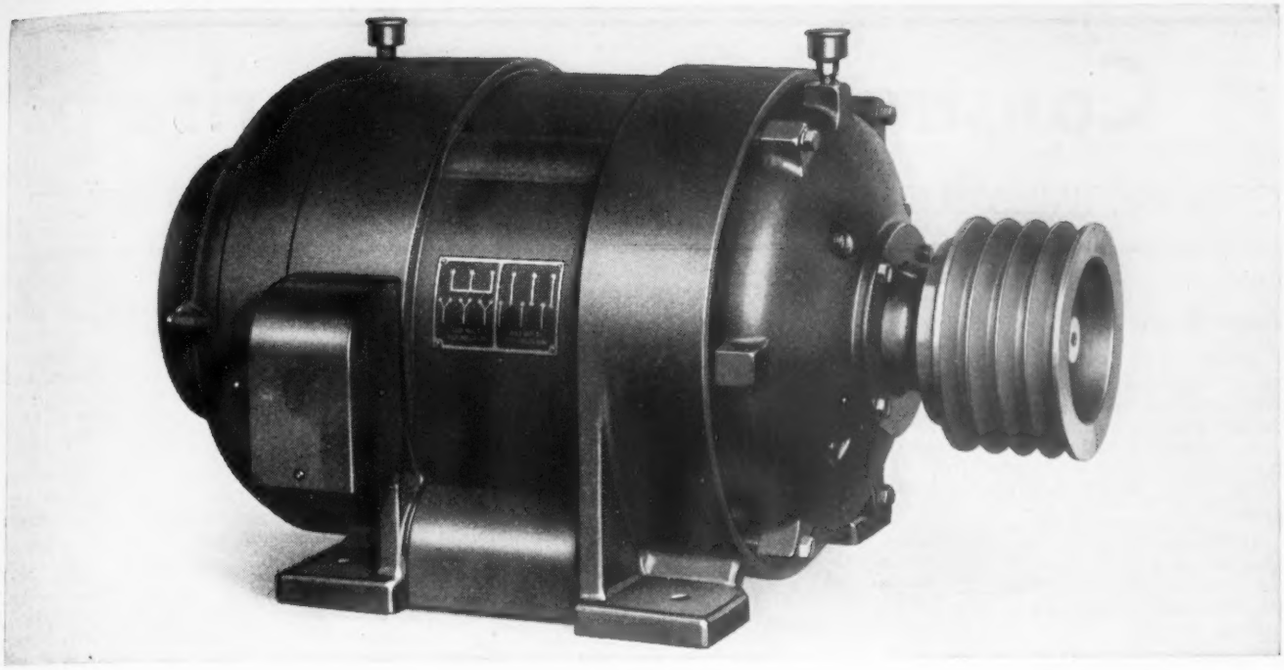
Continental Can Co. Inc., Syracuse, N. Y., has bought the plant and business of the Gordon Can Co., Omaha, Nebr., manufacturer of a general line of cans. S. R. Gordon, manager of the Gordon company, will continue in charge under the new owners.

□ □ □

Detroit Wire Die Co., Detroit, has established a manufacturing branch at McKeesport, Pa., on the property of the Firth-Sterling Steel Co., for whom it makes drawing and extrusion dies with nibs of Firthalloy sintered carbide.

□ □ □

Service Stations Ltd., Toronto, Ont., has bought the plant and business of Tennents Steel Containers Ltd., Granville Island, Vancouver, B. C., and will manufacture a complete line of containers, pumps and meters for handling and marketing gas, oil, paint and allied products. John Harker is general manager of both organizations at Vancouver.



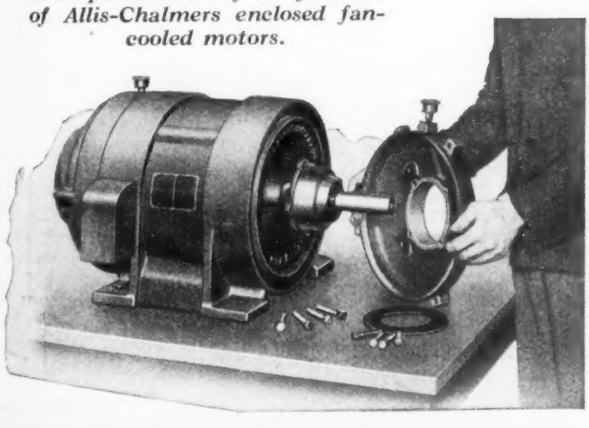
Your Maintenance Man Knows
the Value of these Enclosed Motors

HE knows that where dust, dirt, moisture, dripping water, or destructive gases are present . . . . those drives in out of the way places where motor windings become clogged or moisture soaked . . . . there, Allis-Chalmers enclosed fan-cooled motors reduce trouble and operating expense.

He knows that sturdy construction, liberal design, and unexcelled insulation are features of Allis-Chalmers motors and that the enclosed-fan-cooled type, while thoroughly protected, is readily accessible.

Allis - Chalmers enclosed fan - cooled motors approved by the Underwriters for dusty locations are described in Leaflet 2124. Explosion-proof motors, also approved, are described in Leaflet 2125-A.

Complete and ready accessibility to all parts is one of the features of Allis-Chalmers enclosed fan-cooled motors.



Allis-Chalmers Mfg. Co., Milwaukee

ALLIS-CHALMERS MOTORS

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

PORTLAND, CONN.—Walter Penfield, chairman building commission, will award contract soon for a 2-story junior and senior high school, including manual training departments. Towner & Sellow Associates Inc., 329 Main street, Middletown, Conn., architects.

BOSTON—Meloc Co. has been incorporated with 1000 shares no par value to manufacture machinery, by Greta C. Colman, Cambridge, Mass., Nina Smith, Brockton, Mass.

NORFOLK, MASS.—Commission of Massachusetts, department of correction, State House, Boston, is having plans made by McLaughlin & Burr, 88 Tremont street, Boston, for a 1-story sheet metal shop at the state prison colony, to cost about $60,000.

New York

BUFFALO—Great Lakes Boiler Repair Co. has been incorporated with 500 shares common stock to conduct a boiler business, by G. J. Schipf, Buffalo.

BUFFALO — Ryan Safety Valve Sales Corp. has been incorporated with $150,000 capital by Donovan & Raichle, Buffalo.

JAMESTOWN—Octagon Syndicate has been incorporated with 1000 shares common stock to manufacture metal and wood products, by J. F. Rice, Jamestown, N. Y., and associates.

NEW YORK — United Instrument Corp. has been incorporated with $15,000 capital to produce heat-recording devices, by H. K. Lavin, 65 Creamer street.

NEW YORK—Acme Artistic Steel Ceiling Co. has been incorporated with 100 shares common stock to manufacture builders' supplies, by J. M. Jackman, 51 Chambers street, New York.

NEW YORK—General Steel Products Corp. has been incorporated with 200 shares common stock to deal in metals, by Fromkes, Fromkes & Fromkes, 44 Court street, Brooklyn, N. Y.

NEW YORK—Replacement Machines Co. has been incorporated with $75,000 capital to manufacture valves and gages, by Simpson, Thacher & Bartlett, 120 Broadway.

NEW YORK — Central Iron Mfg. Corp. has been incorporated with $7500 preferred stock and 100 shares common stock by E. & S. L. Greenberg, 277 Broadway.

NEW YORK—General Cap Co. Inc. has been incorporated under a Delaware charter with 24,000 shares common stock, to manufacture forms, caps, coverings and seals for bottles, by Prentice Hall Inc. of Delaware, Wilmington, Del.

ROCHESTER—Brown & Ide has been incorporated with $10,000 capital to deal in machinery and tools, by W. C. O'Keefe, Rochester.

New Jersey

BLOOMFIELD—General Electric Co., Lawrence street, will ask bids about Dec. 15 on a 1-story and basement brick and steel addition to cost about $40,000.

ENGLEWOOD—Bergen Art Metal Works, recently incorporated, is taking over the partnership of the same name and will expand its facilities. Frank Heidelmeier is manager. (Noted Nov. 30.)

NEWARK — Spring Engineers has been incorporated with $100,000 capital to deal in sheet metal, by C. H. Stewart, Newark, N. J.

UNION CITY—Simpson Mfg. Co. Inc. has been incorporated with $30,000 capital to manufacture electrical appliances, by Leo Krauss, New York.

WEEHAWKEN—Interstate Mechanical Products Corp. has been incorporated with 1000 shares common stock to manufacture razors and blades by Samuel J. Rawak, 261 Broadway, New York.

Pennsylvania

ERIE—Standard Stoker Co. has started construction of an office building and tool storage warehouse.

PHILADELPHIA — Shelley Electric Co. Inc. has been incorporated with a Delaware charter to conduct an electrical, mechanical construction and engineering business, by Colonial Charter Co., Wilmington, Del.

Ohio

YOUNGSTOWN — Riley Furnace Regulator Inc. has been incorporated with 250 shares no par value to manufacture regulating devices, by Donald J. Lynn, Harry S. Manchester and associates. Huxley & Smith, Mahoning Bank building, are correspondents.

Michigan

DETROIT — Metal-Tite Products Inc., 6553 Woodward avenue, has been incorporated with $5000 capital to manufacture specialties, by Harry D. Robertson, 14653 Glastonberry avenue, Detroit, and associates.

DETROIT—Michigan Wire Die Co. has been incorporated with $10,000 capital to manufacture diamond wire and steel wire drawing dies, by Arthur W. Koch, 14867 Alma avenue, Detroit, and associates.

DETROIT—American Blower Corp. advises that recent purchases of 18-acre site for a future plant has not been followed by action leading toward building, maturity of plans depending on business developments.

DETROIT—Steel Strop Inc., 4070 West Fort street, has been incorporated with $5000 capital to manufacture a patented safety razor blade sharpener, by Claus D. Lundblad, 5005 Whitfield avenue, Detroit, and associates.

GREENVILLE—Transport Refrigerating Engineers Inc. has been incorporated with 50,000 shares no par value to conduct a general refrigeration business, by F. B. Perrigo and H. A. Hawn, Greenville, Mich.

Indiana

MISHAWAKA—A. Johnson Forge & Machine Co., 1015 East Madison street, South Bend, has started construction of a 1-story plant 60 x 100 feet, to cost $40,000.

MUNCIE—Indiana Steel & Wire Co. is building a warehouse 59 x 236 feet, brick, steel and concrete.

PERU—Chesapeake & Ohio railroad, Richmond, Va., will award contract soon for a shop and engine house here, 30 x 190 feet, to cost $40,000. C. W. Johns, Richmond, Ind., is chief engineer.

SOUTH BEND—A. Johnson Forge & Machine Co. has started construction of a new plant 60 x 100 feet, steel and concrete, with railroad switch. Edwards Iron Works, South Bend, has been awarded contract for the steel.

Illinois

BLOOMINGTON — Herman Bock, city clerk, will award contract soon for improvements to city waterworks, including replacement of boilers, pumps, oil engines and generators, at a cost of about $117,000. Taylor-Woltman, Unity building, Bloomington, Ill., are engineers.

CHICAGO—Modern Ornamental Iron Co., 321 North Crawford avenue, has been incorporated with $10,000 capital to manufacture metal products, by Frank Rosenberg and associates.

CHICAGO—Sheridan Electro Units Corp., 3728 South Indiana avenue, has been incorporated with $10,000 capital to conduct a welding and tool-making

business, by Louis W. Schlifkin, 11 South LaSalle street, and associates.

CHICAGO — Commonwealth Utilities Co., 11 South LaSalle street, room 1730, has been incorporated with 1000 shares no par value to manufacture oil burners stoves and similar devices, by Samuel E. Shulman, 11 South LaSalle street.

CHICAGO—Dependable Sheet Metal & Supply Co., 3169 Milwaukee avenue, has been incorporated with $5000 capital to manufacture sheet metal products, John A. McGill, 108 Reisch building, Springfield, Ill., is correspondent.

COLCHESTER — City is having plans made for waterworks improvements, including centrifugal pumps and other equipment, to cost $70,000. W. A. Fuller Engineering Co., 2916 Shenandoah avenue, St. Louis, is engineer.

JOLIET—Special Tool Corp., 655 Cass street, has been incorporated with $62,500 capital and 12,500 shares no par value to manufacture electric tools, by Barr & Barr, Morris building, Joliet.

NEW ATHENS—New Athens Mfg. Co. has been incorporated with 100 shares no par value to manufacture stoves, ranges and castings, by John F. Nagel, Benjamin F. Schulein and associates, New Athens.

Southern States

WILMINGTON, DEL. — Paramount Signaling Corp. has been incorporated with 10,000 shares common stock to manufacture signaling devices, by Corporation Service Co., Wilmington.

WASHINGTON—General purchasing officer, Panama canal, will take bids until Dec. 15 for steel plate penstocks and outlet pipes for the Madden power plant, on schedule 2698.

WASHINGTON—Bureau of supplies and accounts, navy department, will close bids Dec. 22 on turbine-driven generating units, condensers, air ejectors and spare parts (Schedule 7057); two winches, main, mooring, rigid airship, electro-hydraulic transmission, automatic and manual control, complete with motor, starter and hydraulic transmission (Schedule 7069). Bids will be received Jan. 5 on five chain hoists, trolley, capacity 2 tons, with track clamps (Schedule 7064).

WASHINGTON—Bids will be received until Jan. 5 by the bureau of supplies and accounts, navy department, for the following tools and equipment: Single tangent die head, motor-driven bolt threading machine, (Schedule 7077); vertical, heavy duty, motor-driven milling machine, (Schedule 7078); motor-driven crank shaper, (Schedule 7072); motor-driven shaper, (Schedule 1714); motor-driven face grinding machine, (Schedule 7075); power press brake, (Schedule 7066); motor-driven coil winding machine, (Schedule 7063); heavy duty, plain, rapid traverse, motor-driven shaper, (Schedule 7071); three motor-driven radial drilling machines, (Schedule 7070).

VERSAILLES, KY.—City plans to buy two electrically powered high lift pumps for the waterworks, at a cost of about $50,000.

NEW ORLEANS—Former plant of Sinclair Refining Co. at Moreaux, La., near here, has been acquired by the Tex-York Utilities Co., backed by Cortland, Palmer & Co., New York, and plans are being made for reopening the plant with an increase of 20,000 barrels in capacity. A 400-mile pipeline to the East Texas field is planned to bring crude to the refinery. J. Whitt Gurley, care Association of Commerce, is in charge.

Texas

COLLEGE STATION—A. & M. College will receive bids about Jan. 1 for a 3-story agricultural engineering building, 80 x 120 feet, and a 3-story petroleum engineering building, 60 x 110 feet, each to cost about $200,000. F. E. Geiseke, College Station, is architect. (Noted Nov. 16.)

DALLAS—International Fire & Burglar Alarm Co., recently incorporated, advises it has leased shop space at 3104 Oak Lane for the manufacture of thermostatic signal systems. J. G. C. Creel is secretary-treasurer.

DALLAS—City, E. Goforth secretary, has voted $1,000,000 in bonds and will take bids early in 1932 for a sewage disposal plant, including a pump and blower station 44 x 74 feet, pumping station 20 x 20 feet and screen house 34 x 54 feet, six air compressors and other equipment. Hawley, Freese & Nichols, Capps building, Fort Worth, Tex., are engineers.

HOUSTON—Simplex Mfg. Co. has been incorporated with 350,000 shares no par value to manufacture cotton-picking machinery, by J. E. McGeehee, 928 Post-Dispatch building.

HOUSTON—Southwestern Supply Co., J. E. Todd manager, organized to manufacture wire specialties, advises that it has leased a shop 60 x 80 feet at 2400 Nance street, for the manufacture of coat hangers and other equipment.

LONGVIEW—Longview independent school district is having plans made for a high school with manual training departments and equipment. Cost of entire school is $175,000.

SAN ANTONIO—War Department, Washington, is having plans made for three blacksmith shops with equipment for automobile and truck repairing, at Camp Bullis, near here.

Minnesota

DULUTH — Minnesota Power & Light Co., W. H. Burke president, 30 West Superior street, plans construction of a second unit to its steam generating plant on Main street, including equipment to generate 35,000 horsepower, at a cost of about $3,000,000.

Wisconsin

MANITOWOC — Manitowoc county plans construction of a machine shop to cost $40,000. A. W. Tetzlaff, Manitowoc, is clerk.

Iowa

DAVENPORT—Frank Foundries Corp. will build a 1-story addition, 50 x 91 feet, at 1739 West Second street, for a pattern shop and storage.

Idaho

COEUR D'ALENE—An election will be held soon on the question of issuing $650,000 in bonds for construction of a municpal hydroelectric plant. Franklin P. Wood is engineer. (Noted Oct. 19.)

Pacific Coast

MADERA, CALIF.—Madera irrigation district plans establishment of 48 electrically operated pumping plants in its water supply system, including also a hydroelectric generating station to cost $1,400,000.

SELMA, CALIF.—Consolidated irrigation district is seeking rights to use water from San Joaquin river and plans to erect hydroelectric works to develop 148,000 horsepower at a cost of $10,000,000.

STOCKTON, CALIF.—Pacific Gas & Electric Co., 245 Market street, has had plans prepared for a 1-story meter shop, to cost $40,000.

SEATTLE—Bair Chemical Co. has been incorporated with $10,000 capital to manufacture machinery and chemical preparations, by D. L. Bair and Julian Bair, Care Hyland, Elvidge & Alvord, attorneys, Dexter Horton building, Seattle.

SEATTLE — Commercial Boiler Works and Draper Engine Works, West Lander street, the former manufacturer of boilers and pipe construction and the latter doing a general machine shop business, suffered severe damage by fire Dec. 1. Both companies will rebuild and will need some equipment, though plans are not sufficently advanced for them to be in the market.

VANCOUVER, WASH.—United Pacific Mines has been incorporated with $50,000 capital to engage in metalliferous mining, by Charles F. Walker and associates, 341 Salmon street, Portland, Oreg.

Dominion of Canada

NEW WESTMINISTER, B. C.—Canada Rice Paper Mills Ltd., 339 Railway avenue, will build a mill and dock on

Lulu island waterfront, including power house, main mill, warehouse and office building.

HAMILTON, ONT.—Gough Engineering Co. Ltd. has been incorporated with $50,000 capital, by James Gough, to carry on the business of mechanical engineers and to manufacture machinery.

LONDON, ONT. — London Rolling Mills, closed a year ago and now owned by Ingersoll Machine Tool Co. and Morrow Screw & Nut Co., is being reopened and put on production.

PRESTON, ONT.—Preston Lumber Co., Guelph street, will rebuild its burned plant and will require new machinery and tools to replace former equipment.

TORONTO—L. Back & Co. Ltd. has been incorporated with $40,000 capital by Louis Back, to manufacture truck bodies and other vehicular units.

TORONTO, ONT.—United Typewriter Co., 135 Victoria street, will build an addition for the manufacture of typewriters, but architect has not been appointed. J. J. Seitz is president.

TWEED, ONT.—Tweed Foundries Ltd. has been incorporated with $40,000 capital to operate a foundry, by Wilberforce Gordon, Tweed, Ont.

LACHINE, QUE.—Jenkins Bros. have practically completed equipping first unit of new foundry and have plans for two other units to follow, at a cost of $2,000,000.

SHAWINIGAN FALLS, QUE.—Canadian Industries Ltd., 1050 Beaver Hall Hill, Montreal, Que., is awarding contracts for its new cellophane plant. General contract has been awarded to Fraser, Brace Engineering Co. Ltd., 107 Craig street West, Montreal, Que.

REGINA, SASK.—Ratepayers will vote no franchise to Power Co. of Canada Ltd., 355 St. James street, Montreal, Que., to supply gas to city by means of 175-mile pipe line from Bowdoin field, to cost about $10,000,000.

New Trade Publications

FORGING—National Machinery Co., Tiffin, O., shows in its machine talk No. 79 how an unusual piece of forging was handled by its diemakers to produce a desired result economically.

GEAR BURNISHERS—City Machine & Tool Works, Dayton, O., in a current bulletin describes its line of gear burnishers with illustrations and table of specifications.

INDUSTRIAL MOTOR DRIVES—Hertzler & Zook Co., Belleville, Pa., has issued its 1932 catalog of industrial motor drives for practically all types of machinery.

PRESSES—Hydraulic Press Mfg. Co., Mount Gilead, O., has issued a catalog describing its line of hydraulic presses, including types for compressing loose material such as scrap metal.

ELECTRICAL EQUIPMENT—General Electric Co., Schenectady, N. Y., has issued bulletins on pressure and vacuum switches, No. 821B; motor-starting switch, No. 1522; grid-type field rheostats, No. 1519.

RECORDING INSTRUMENTS—General Electric Co., Schenectady, N. Y., has issued a bulletin, No. 1061D, describing and illustrating its line of recording instruments for alternating and direct current.

SANDBLAST NOZZLE—A. E. Wood Co., 1514 East Nadeau street, Los Angeles, has issued a folder describing its sandblast nozzle. A feature of design is its length, 7 inches, and its "No-Coupling" feature.

WELDING—A bulletin on welding of purlins in an arc-welded mill building, Plate 29, has been issued by the Lincoln Electric Co., Cleveland, describing and illustrating methods employed in uniting the purlins to roof trusses.

HEAT TRANSFER — Bulletin No. 11-S by the Schutte & Koerting Co., Philadelphia, is devoted to its radiafin tubes for heaters and coolers and the units that can be built up of them. Illustrations and data tables supplement the text.

MAGNETS—Bulletin 125 by the Ohio Electric Mfg. Co., Cleveland, tells the story of the company's separation magnet with a record of a number of magnets in service. Quantities of steel and iron removed by these magnets are shown in illustrations.

CENTRIFUGAL PUMPS — Pennsylvania Pump & Compressor Co., Easton, Pa., has issued two bulletins, No. 216 on multi-stage pumps and No. 217 on single stage, each illustrated and with ample description.

COMPRESSORS—Vertical air compressors are described and illustrated in bulletin No. 88-B and 88-C by the Sullivan Machinery Co., 50 Church street, New York. The general features of design, operation and technical data are included.

BORING MACHINE — A precision boring machine produced by the Ex-Cell-O Aircraft & Tool Corp., 1200 Oakman boulevard, Detroit, is described in its bulletin DB 2131. Illustrations of the machine and its parts show method of operation.

FURNACES—W. S. Rockwell Co., 50 Church street, New York, in Bulletin No. 322 describes and illustrates its rotary hearth heat treating furnace for heat treating and forging ferrous and nonferrous metals by use of electricity or fuel.

OIL BURNERS—Enterprise Oil Burner Co., 2902 Nineteenth street, San Francisco, has published a catalog describing several improved types of oil burners for power plants, industrial buildings, office buildings and marine service. Accessories are also included.

LUBRICATION — Texas Co., New York, in its current issue of *Lubrication*, considers the problems of lubrication of air, refrigeration and gas compressors. Illustrations supplement the text, which considers the various phases presented to the engineer in lubricating these types of machines.

SHEARS — United Engineering & Foundry Co., Pittsburgh, in Bulletin E-901 features its lever shears for general rolling mill work in dividing or cropping rods and other sections, for scrap yards and general utility use in factories. The machines and details are illustrated.

CARBON TETRACHLORIDE—Roessler & Hasslacher Chemical C., New York, has issued a bulletin on the properties, uses, applications, toxicity and testing methods of carbon tetrachloride used in fire extinguishers, dry cleaning, metal degreasing and cleaning electric motors, due to its non-flammability.

SMALL MOTORS—Wagner Electric Corp., St. Louis, in Bulletin 167 covers its line of small motors. It is in eight parts, describing single-phase, polyphase and direct current motors in fractional horsepower ratings. Five parts are now available and the remaining three will be issued shortly.

PUMPS—Worthington Pump & Machinery Corp., Harrison, N. J., has released the following publications for its trade: Specification sheet No. D-412-S6, power pumps, horizontal-duplex-piston, cap and valve plate, enclosed crankcase, self-oiling No. W-205-S1A steam air injector, two-stage condensing double unit No. W-205-S2, same, single unit.

STOKERS—A condensed catalog of stokers has been issued by the Stoker Manufacturers association, describing 48 types of mechanical stokers manufactured by the 14 members. The various stokers are grouped as multiple retort underfeed, single retort underfeed, chain grate and overfeed. The text is limited to engineering descriptions and a section is devoted to engineering data relating to modern stoker practice.

REFRACTORIES—Catalog No. 232, issued by the McLeod & Henry Co., Troy, N. Y., manufacturer of furnace refractories, describes various types of refractory blocks, bricks and complete settings, of silicon-carbide refractory developed by this company. Physical characteristics and manufacturing processes are described in detail and its advantages, limitations and high-temperature applications in lining boilers, industrial furnaces, kilns, retorts, muffles.